Proceedings
from the Third
Information Systems Client Conference

Fredericton, New Brunswick

April 22 - 23, 1987

NB Government Information Systems Client Conference
April 22 & 23, 1987

Table of Contents

DAY ONE

Page

Introduction To Conference 1
Presented by Jerrie Fowler

Recap Of The Last Conference 3
Presented by David Loukes

Introduction To Communications 11
Presented by E. Sousa, G. Boone, G. Boyd
and D. Ingraham

Communications Architecture 19
Presented by Art Caston, DMR

Status Report On ISD's Communication Study 39
Presented by Danny Keizer

An Overview Of DMR's Communication Study 66
Presented by Blaine Atkinson

DAY TWO

Information Systems Communication discussions:
"Etherlink Local Area Network Installation"
Written by Janet Digdon, Presented by Emilia Sousa........... 80
"Communications Experiences - Mini Network"
Presented by Gary Fraser 101
ISD Network History" presented by Drew Ingraham 104

An overview of the Multivendor Networking Project 110
Presented by Danny Keizer for Marc Bage

Results Of The Recent Micro Tender 138
Presented by Charlie Chiasson

HRIS Project Status Report 158
Presented by Colin Payne

Technology Strategy For The NB Government 166
Presented by Jerrie Fowler

Micro Users Group Status Report 190
Presented by Tom Parker

Conference Wrap Up 201
Presented by Gary Fraser and Gary Andrews

NB Government Information Systems Client Conference
April 22 & 23, 1987

Table of Contents

Demos Page

(1) Mini to Micro Demo 204
Demonstrated by Gary Fraser - Commerce & Technology

(2) NEWBED Bulletin Board 206
Demonstrated by Bill Brydges - Education

(3) FIS Online System Demo of ICC Communications Software 208
Demonstrated by Dick Slipp - Information Systems Division

(4) Transfer and Conversion of Micro WP Document to Wang (V Stern) 210
Demonstrated by Susan Paul - Information Systems Division

(5) Microcomputer to Microcomputer File Transfer 213
Demonstrated by Glen Boyd - Transportation

(6) Mapper Graphics Demonstration 220
Demonstrated by Art Clogg - Information Systems Division

Appendicies

A. Agenda 227

B. ISD Organization Chart 230

C. List of Attendees 237

D. List of Departmental Information Systems Coordinators 242

E. Status Reports 244

Introduction To Conference

Presented by
Jerrie Fowler

NB Government Information Systems Client Conference
April 22 & 23, 1987

May 1, 1987

Theme

The theme of this conference is "Communications". The presentations scheduled are focused around industry trends and the effective application of communications technologies.

We believe this meeting will assist the Information Systems Division in better understanding and of course, better servicing our clients; and assist the departments in better utilizing communications technology.

Opening

Jerrie Fowler opened the conference by welcoming the large turnout to the third Information Systems Conference and by reminding the audience that this is a conference for clients.

Recap of the Last Conference

Presented by
David Loukes

Summary of Common Points

Client Breakout Sessions
October 21-22, 1986

- **ISD Planning Process**
- **ISD Roles & Responsibilities**
- **Cincom Project**
- **Future Conference Directions**
- **Micro Issues**
- **Other Issues**

ISD Planning

Common Points

- distribute handouts prior to meetings
  - * overview of planning sessions useful to IS Coordinators
- not enough perceived progress
- too general to debate

Roles & Responsibilities

Common Points

- not enough direct interaction between clients and ISD staff:
  - * more emphasis on marketing
  - * client reps should be kept informed of activities
- need for senior management education
- a catalog of systems needed
- more sharing of information on:
  - * ISD & client dept. activities
  - * current research
- more communication with 'unrepresented' departments
- more corporate funding for services
- a need for user groups

Cincom Project

Common Points

- thorough report, well done
- concern re time frame for decision
- this type of product perhaps more suited for departmental systems
- concern over operational costs
- most departments have no specific immediate need for these products

Future Conferences

Common Points

- **useful, should be continued**
- **more information on current activities:**
  - *** user group reports**
  - *** active projects (both ISD and client depts.)**
- **distribute background information prior to meetings**

Other Issues

Specific Points

- no common points here
- IBM migration strategy unclear
- communications network concerns:
  - * common network strategy
  - * more timely response to current client needs
- chargeback info by user ID

Micro Issues

Summary of Feedback from Breakout Sessions

- **Micro tender enhancements**
- **Education and training:**
  - *** more courses**
  - *** regional delivery**
- **Micro Users Group needed**
- **Updated policies, standards, guidelines**
- **Micro applications catalog**
- **Expanded ISD micro services:**
  - *** bulk software purchases**
  - *** maintenance**

Introduction to Communications

Presented by
E. Sousa, G. Boone, G. Boyd and D. Ingraham

INTRODUCTION TO COMMUNICATIONS

by E. Sousa, G. Boone,
G. Boyd & D. Ingraham

Introduction to communications was presented in three steps: a small introduction, a video tape and some diagrams. The following was covered:

A) WHAT IS COMMUNICATIONS (GENERAL DESCRIPTION)

1) Text Communications
2) Voice Communications
3) Video Communications
4) Data Communications

B) BUZZ WORDS

1) Basic Components...(Terminal to Host Diagram)
2) Transmission Principles...(Medicare Blast System)
3) Protocols...(Auto Fuel Dispensing System)
4) Network...(Datapac Access Diagram)
5) Summary

C) EXISTING COMMUNICATION SET-UP

D) FUTURE CONSIDERATIONS FOR DATA COMMUNICATION

The Buzz Words and diagrams discussed follow.

BUZZ WORDS

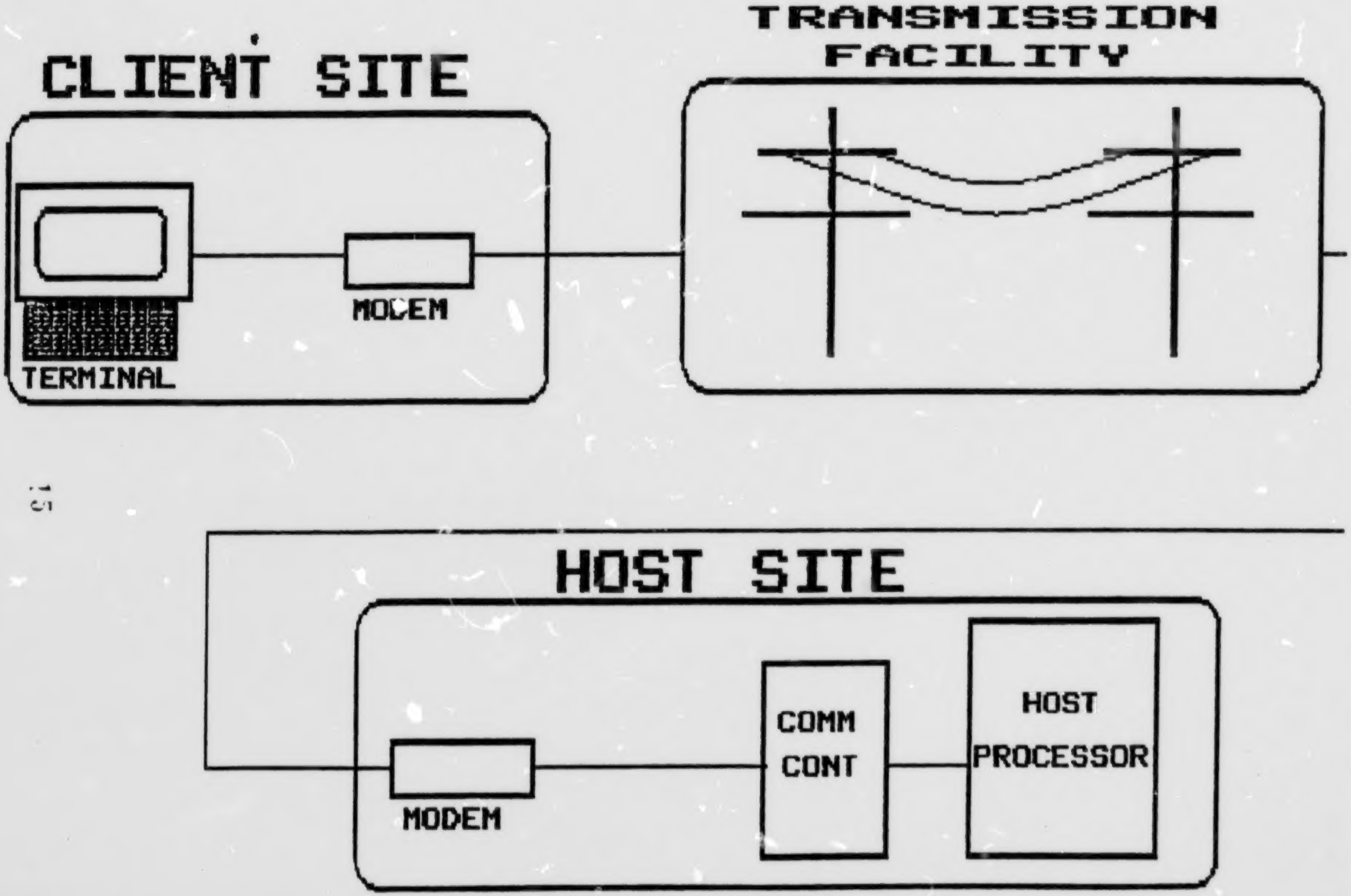
Basic Components

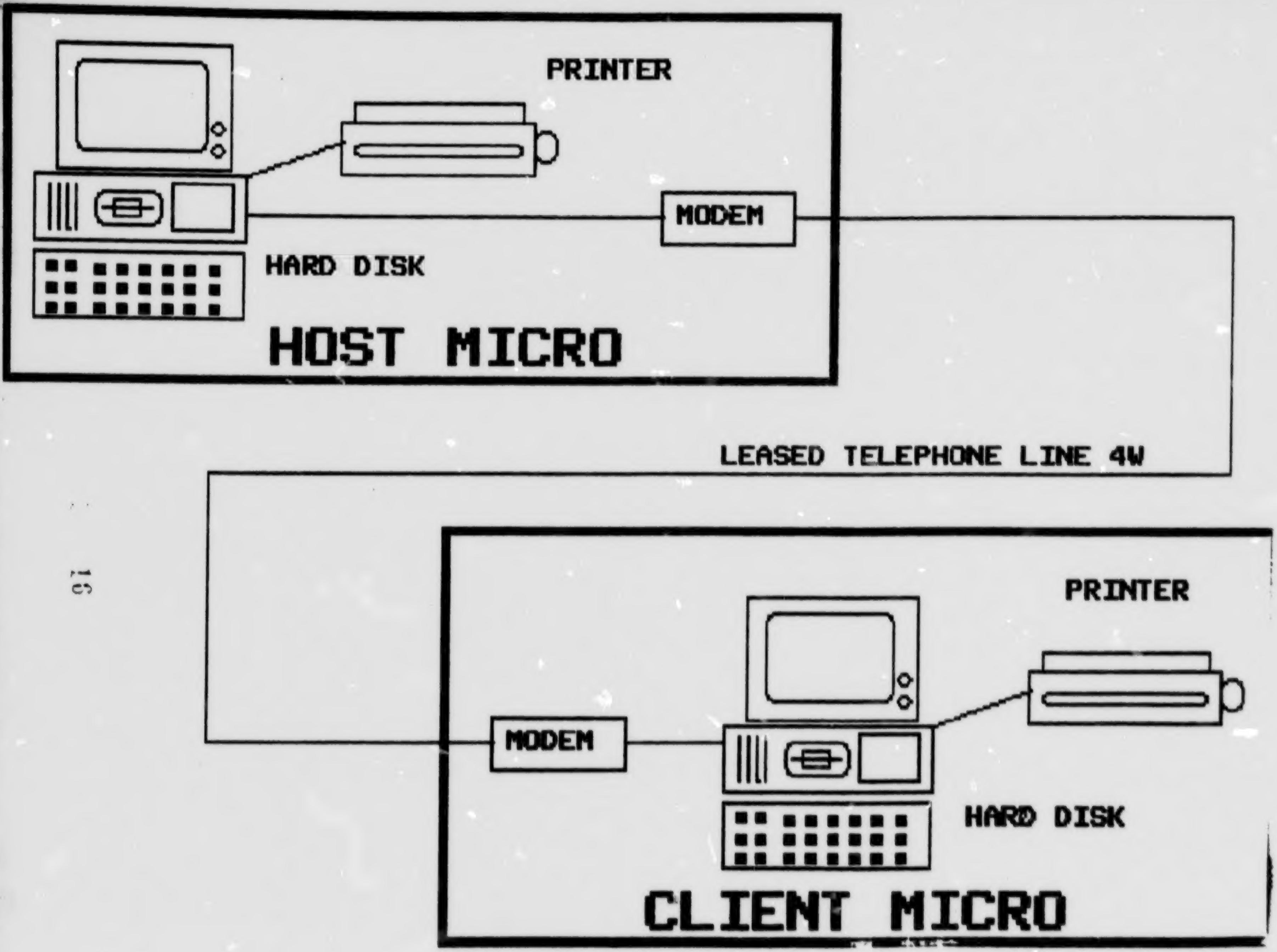
TERMINAL	A device generally consisting of a keyboard and a viewscreen used for inquiry-response, conversational and message switching applications.
MODULATOR	A device that converts electrical pulses from a computer to a waveform acceptable by transmission facilities, such as a telephone line.
DEMODULATOR	A device that takes the waveform from a transmission facility and converts it to a form acceptable by a computer.
MODEM	An acronym for MODulator/DEModulator. It is a device that converts data from a form that is compatible with data processing equipment to a waveform that is compatible with transmission facilities and vice versa.
MODULATION	The process whereby a base waveform (carrier) is modified to transmit data.
COMMUNICATION CONTROLLER	A device that funnels data from many incoming communication lines, into a single path and in a form acceptable to a processor. It also converts processor output to a form acceptable to a modem and its communication line.
HOST PROCESSOR	The computer used to control all aspects of the processing environment into which the terminal user is trying to gain access.

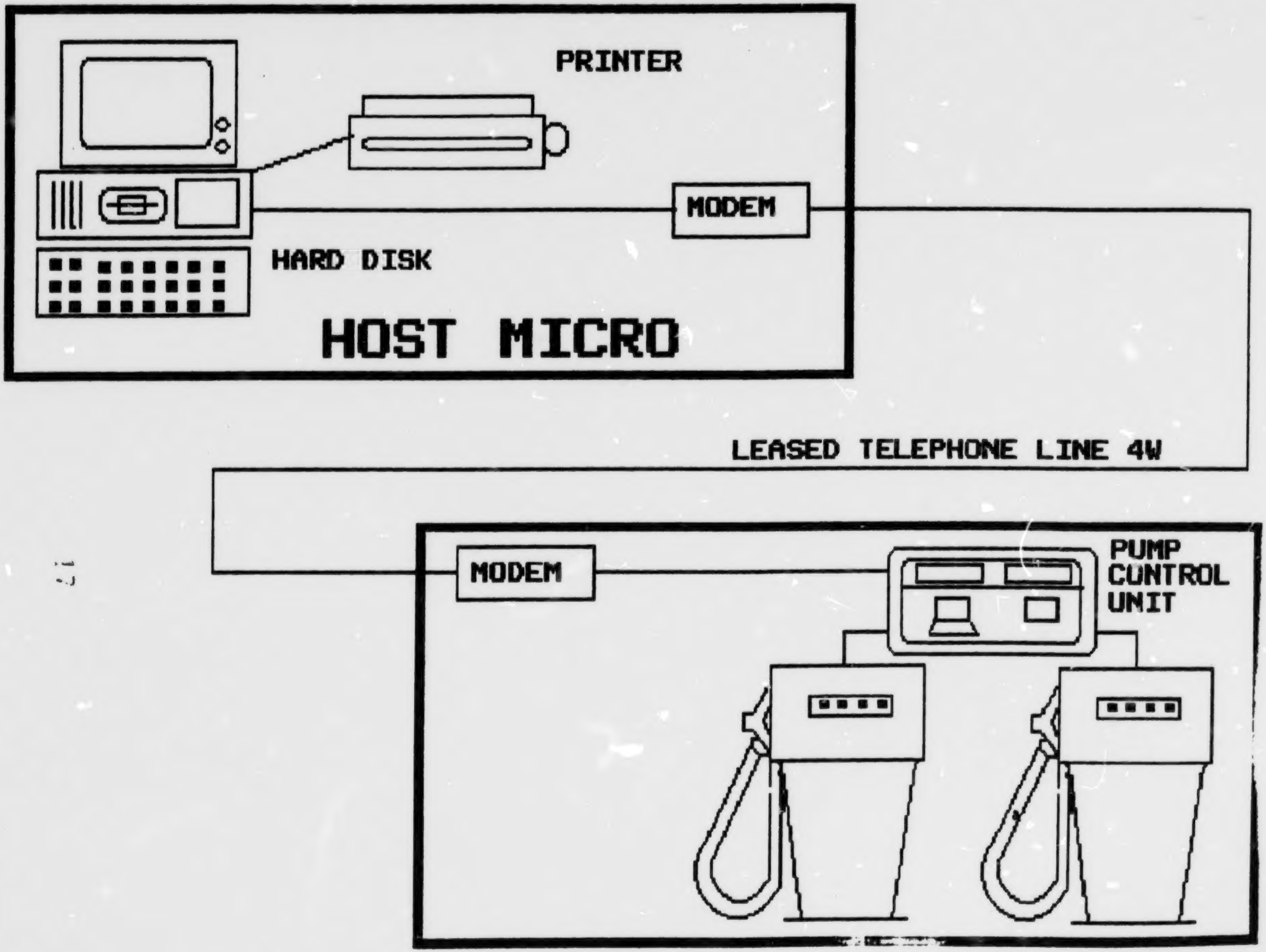
TRANSMISSION PRINCIPLES

BIT PARALLEL	A method of transmission in which bits travel over separate, but parallel, paths to their destination.
BIT SERIAL	A method of transmission in which bits are transmitted sequentially over one communications line.
SYNCHRONOUS	A mode of data transmission in which a group of characters (Message Block) are transmitted as a continuous stream and are preceded by several specific synchronizing characters.
ASYNCHRONOUS	A mode of data transmission in which each character is enveloped by start and stop signals.
HALF-DUPLEX	The transmission of data in two directions but in only one direction at a time.
FULL-DUPLEX	The transmission of data in two directions at the same time.
MESSAGE	A transmitted series of words or symbols that are designed and intended to convey information. It consists of a header, text and an end-of-message symbol.
HEADER	The first part of a message containing all necessary information for directing the message to its destination.
TEXT	The part of a message that contains the information that is to be conveyed.
END	The last part of a message to be transmitted.

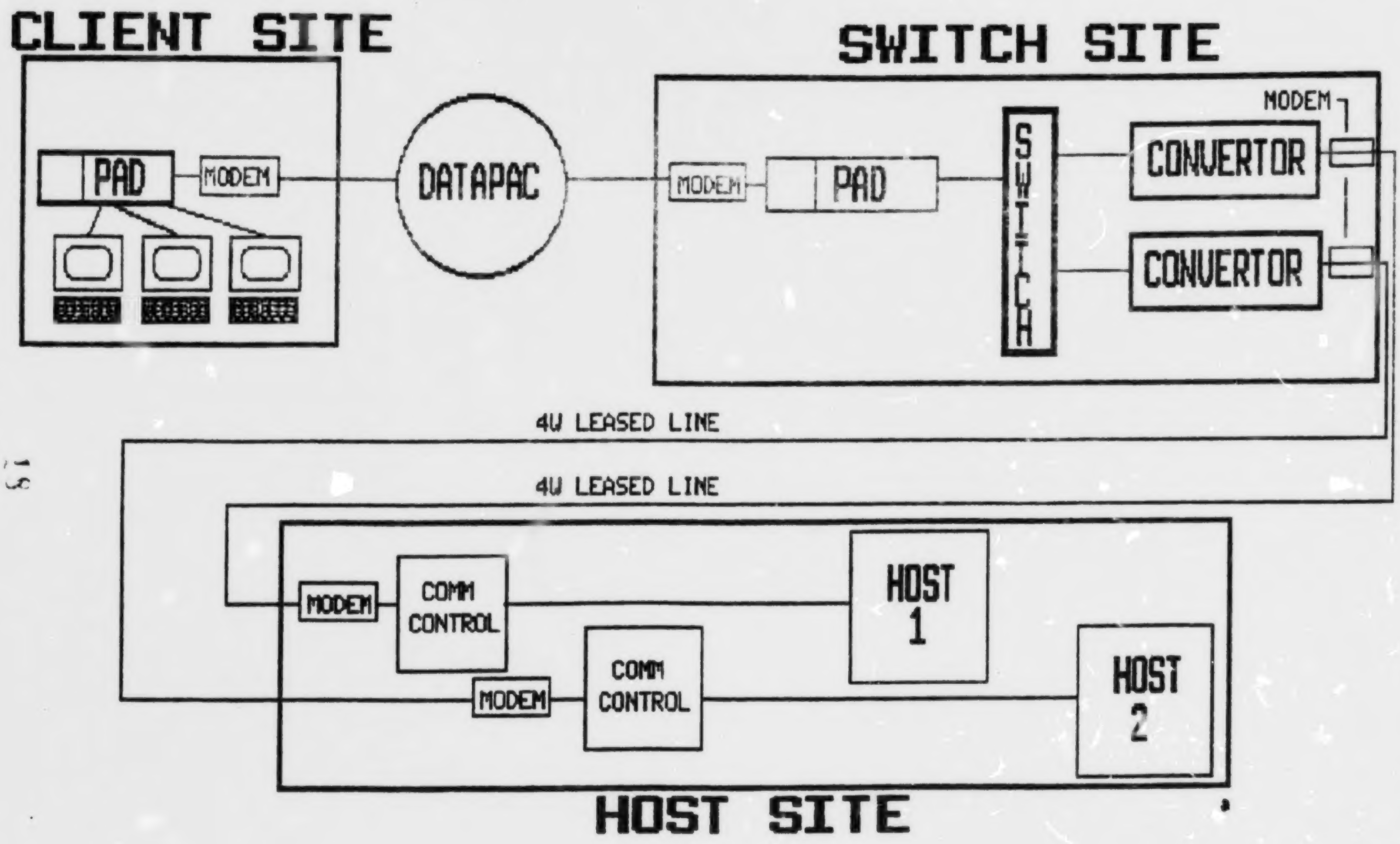
BASIC COMPONENTS


CLIENT SITE
TERMINAL
MODEM
TRANSMISSION FACILITY
HOST SITE
MODEM
COMM CONT
HOST PROCESSOR


PRINTER
MODEM
HARD DISK
HOST MICRO
LEASED TELEPHONE LINE 4W
PRINTER
MODEM
HARD DISK
CLIENT MICRO


PRINTER
MODEM
HARD DISK
HOST MICRO
LEASED TELEPHONE LINE 4W
MODEM
PUMP
CONTROL
UNIT

NETWORK


CLIENT SITE
PAD
MODEM
DATAPAC
SWITCH SITE
MODEM
PAD
SWITCH
CONVERTOR
CONVERTOR
MODEM
4W LEASED LINE
4W LEASED LINE
MODEM
COMM CONTROL
HOST 1
MODEM
COMM CONTROL
HOST 2
HOST SITE

Communications Architecture

Presented by
Art Caston, DMR

NEW BRUNSWICK GOVERNMENT

INFORMATION SYSTEMS CONFERENCE

COMMUNICATIONS

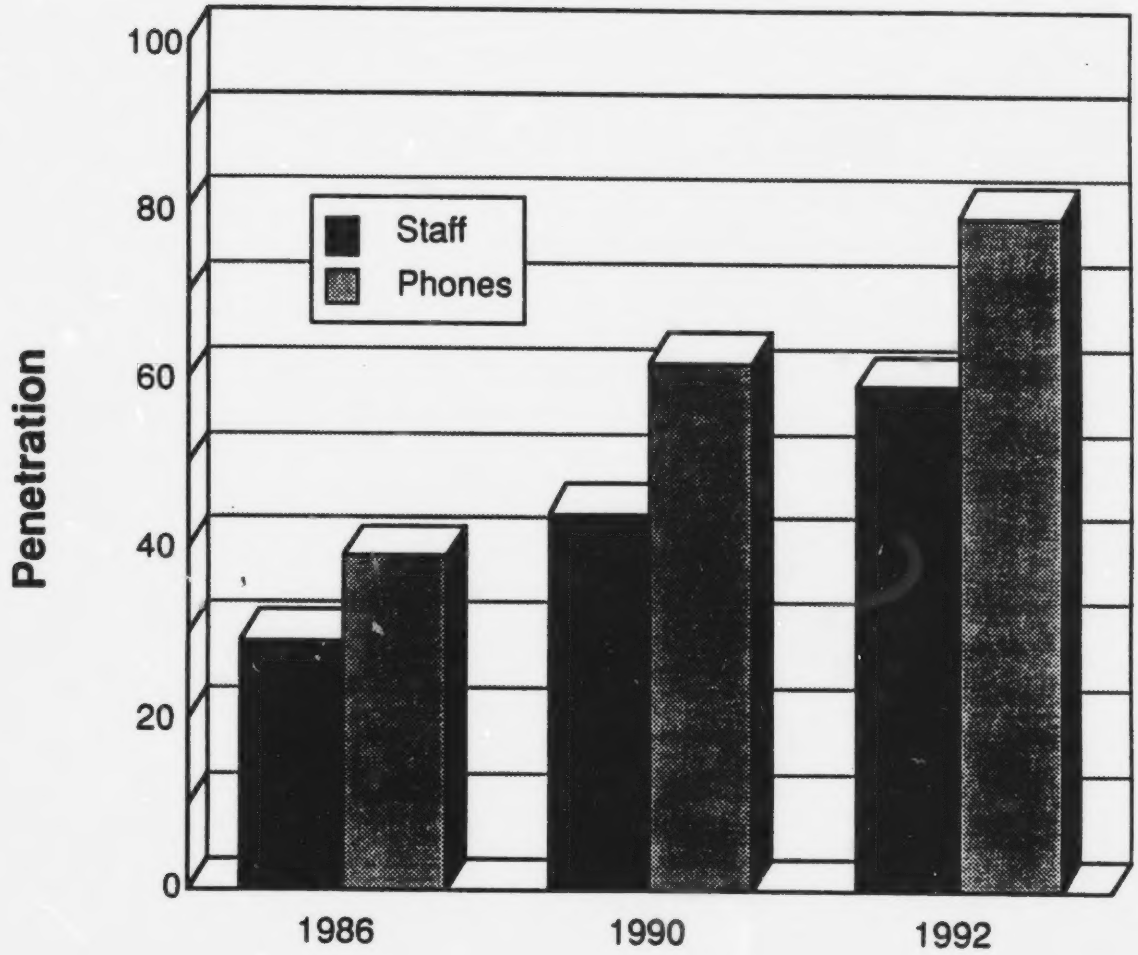
ARCHITECTURE

Art Caston

DMR Group Inc.

April 22, 1987

Computer Workstation Penetrations as a Percentage of Total Employees and Total Phones



TWO EXTREME BUSINESS PERSPECTIVES ON INTEGRATION:

CONVENTIONAL O.A. OR

(OSTRICH APPROACH)

THE L.A.N. TECHNIQUE

(LEMMINGS ARE NOTORIOUS)

INTEGRATED APPLICATION GOALS

- Compound Document -

The ability to combine different forms of information to best meet the purpose of the document

- Common Shared Space -

The ability to interact in real time through the system such that the users share part of the experience of being there, also involving combinations of the four forms of information

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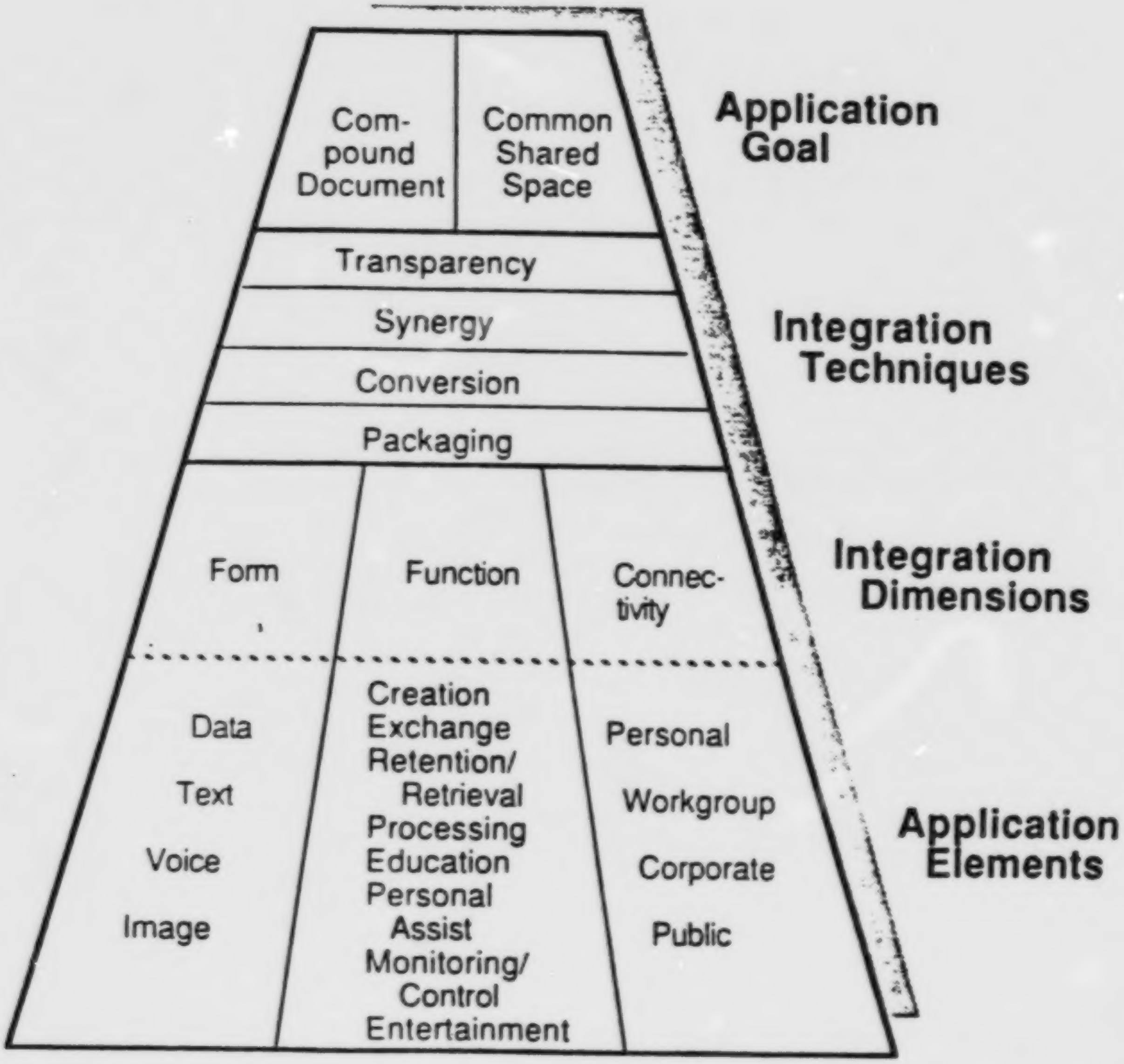
THE APPLICATION PERSPECTIVE ON INTEGRATED TECHNOLOGIES



Application Goal

Compound Document

Common Shared Space

Integration Techniques

Transparency

Synergy

Conversion

Packaging

Integration Dimensions

Form

Function

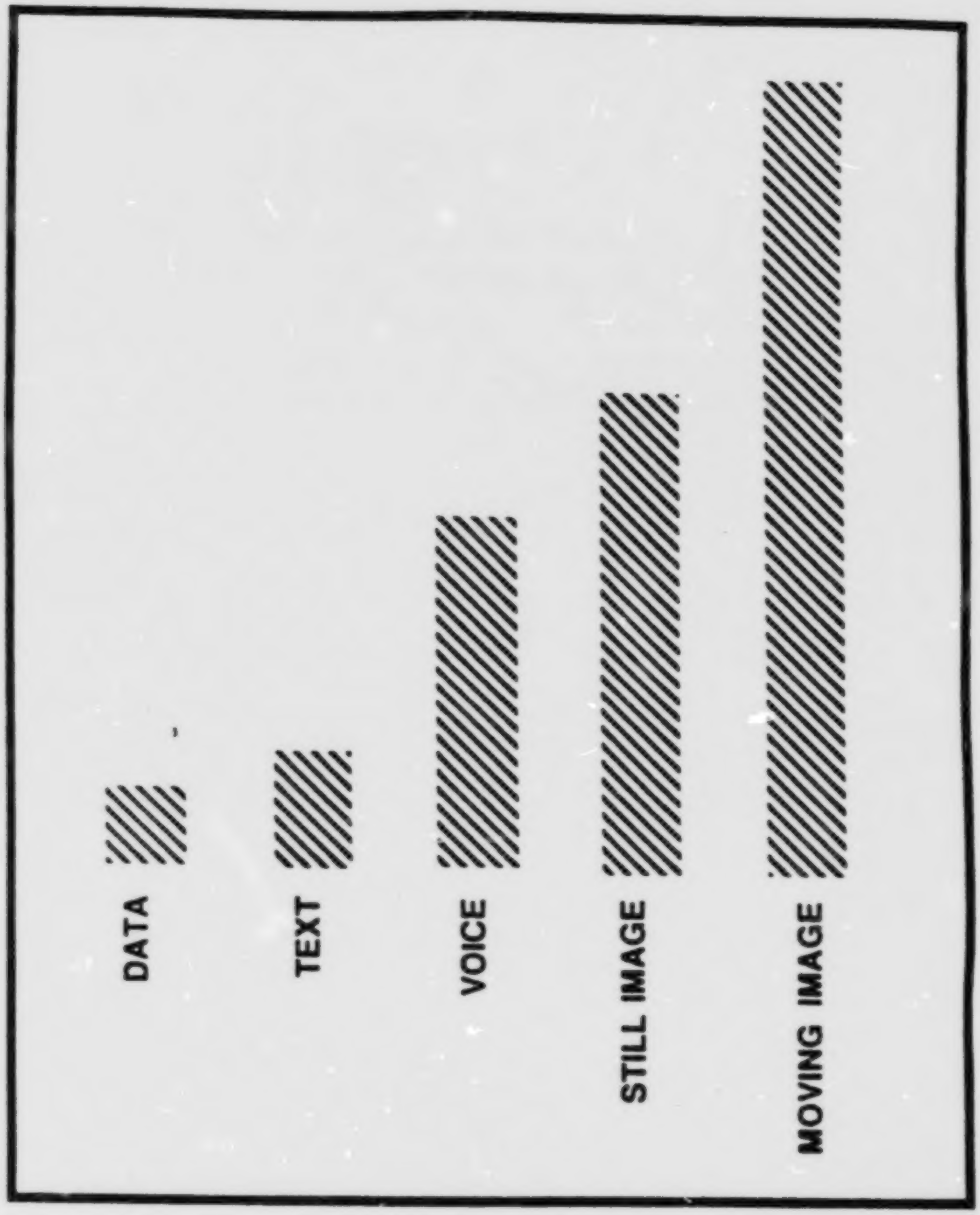
Connectivity

Application Elements

Form	Function	Connectivity
Data Text Voice Image	Creation Exchange Retention/Retrieval Processing Education Personal Assist Monitoring/Control Entertainment	Personal Workgroup Corporate Public

© DMR Group Inc.

RELATIVE CAPACITY REQUIREMENTS OF THE FOUR FORMS



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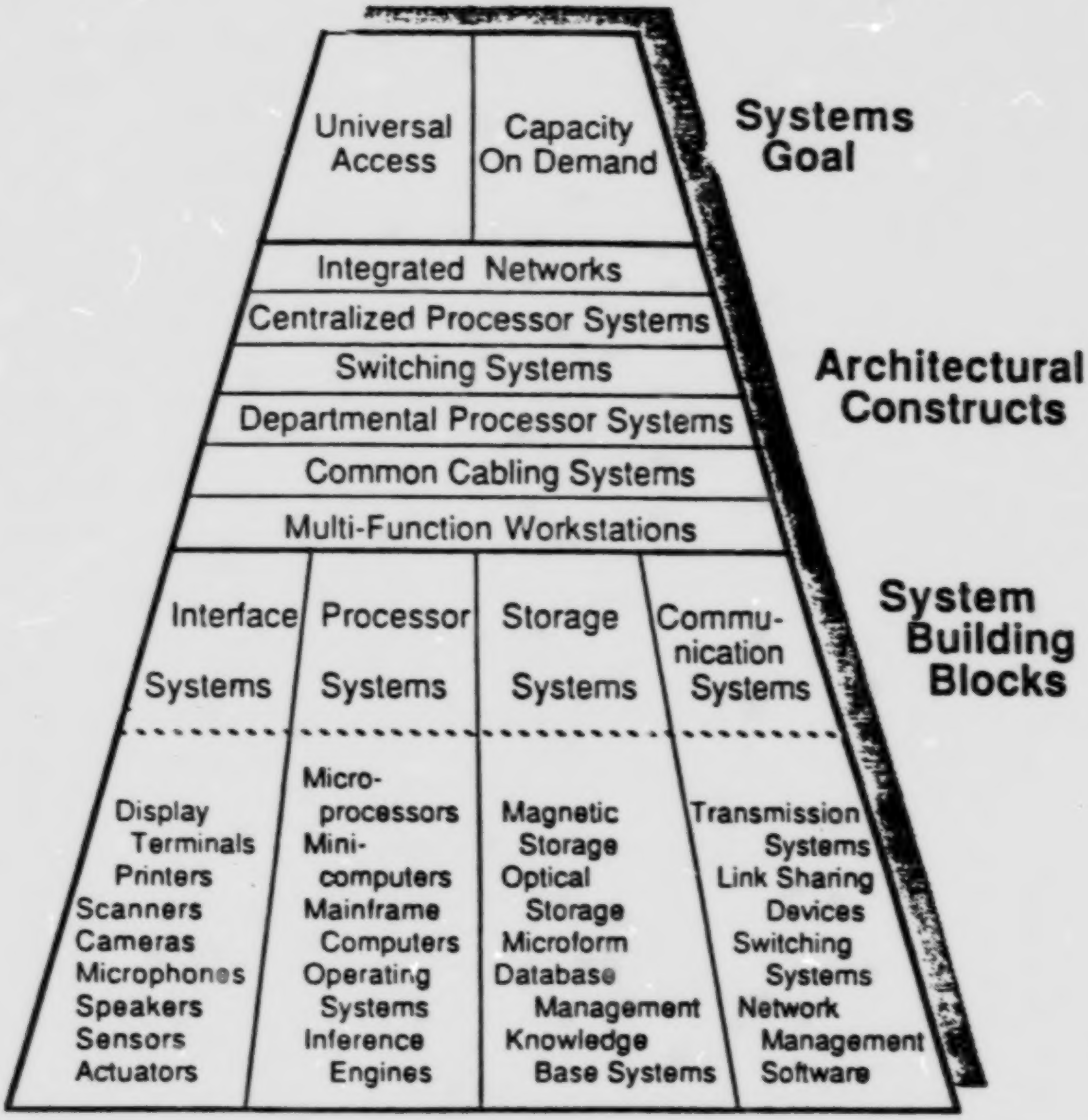
THE SYSTEMS PERSPECTIVE ON INTEGRATED TECHNOLOGIES



Systems Goal

Universal Access

Capacity On Demand

Architectural Constructs

Integrated Networks

Centralized Processor Systems

Switching Systems

Departmental Processor Systems

Common Cabling Systems

Multi-Function Workstations

System Building Blocks

Interface Systems	Processor Systems	Storage Systems	Communication Systems
Display Terminals Printers Scanners Cameras Microphones Speakers Sensors Actuators	Microprocessors Minicomputers Mainframe Computers Operating Systems Inference Engines	Magnetic Storage Optical Storage Microform Database Management Knowledge Base Systems	Transmission Systems Link Sharing Devices Switching Systems Network Management Software

Technology Elements (Examples)

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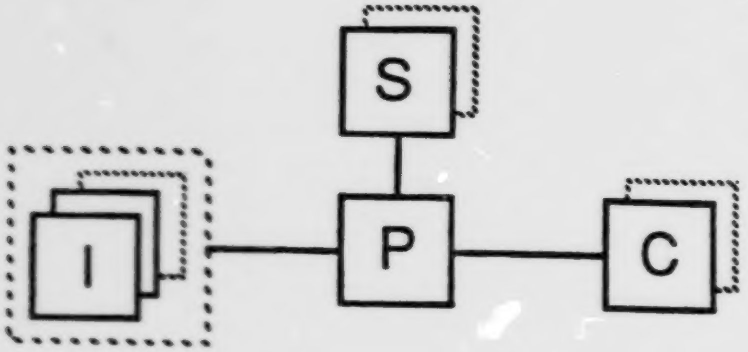
Architectural Construct 1

MULTI-FUNCTION WORKSTATION

Building Block Configuration -



Definition -

Integration around the workstation, combining multiple interface devices supporting multiple forms with a processor, storage system, and communications gateway.

Example -

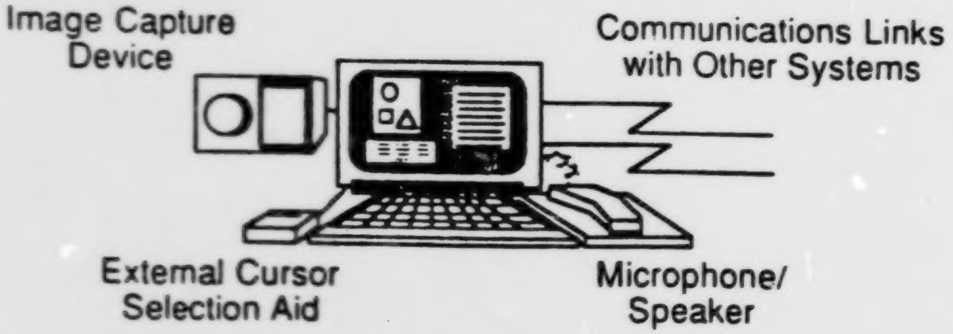


Image Capture Device
Communications Links with Other Systems
External Cursor Selection Aid
Microphone/ Speaker

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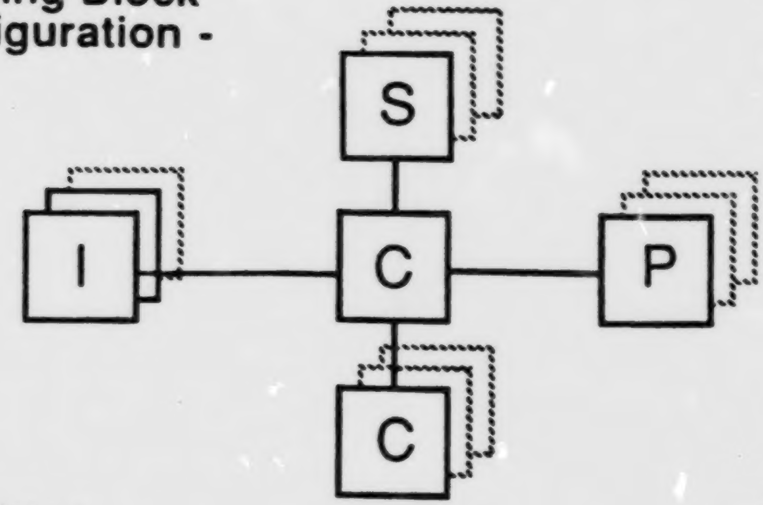
Architectural Construct 2

COMMON CABLING SYSTEM

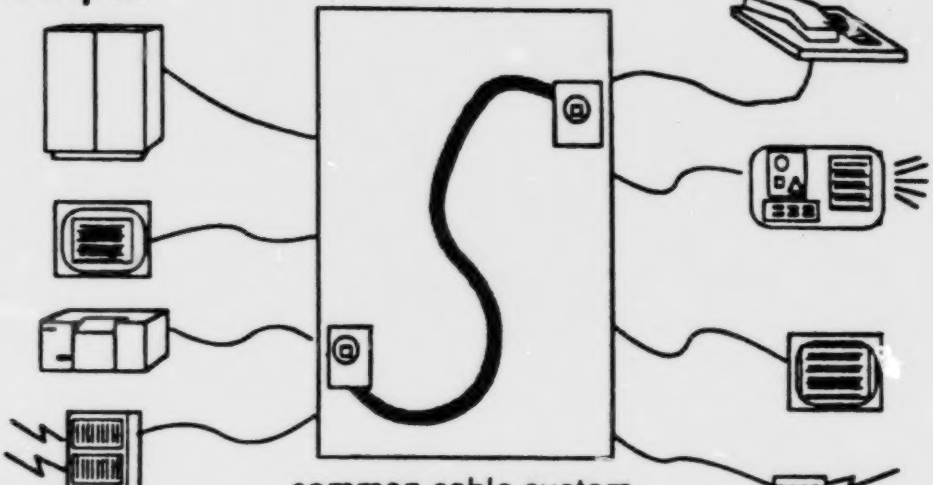
Building Block Configuration -



Definition -

Integration around a common cable, a passive element, providing communication between attached devices that support the required communications control.

Example -



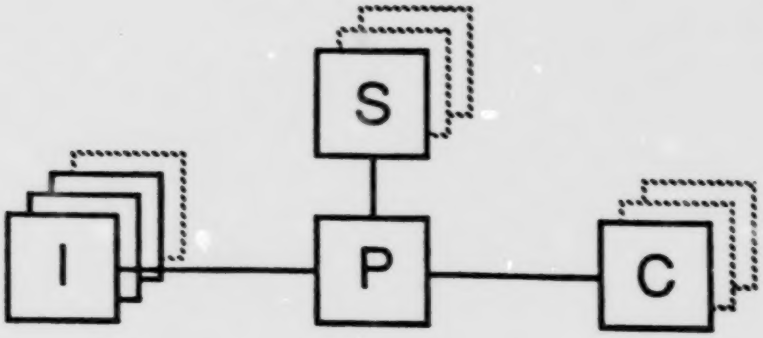
common cable system with taps or drops

© DMR Group Inc.

Architectural Construct 3

DEPARTMENTAL PROCESSOR

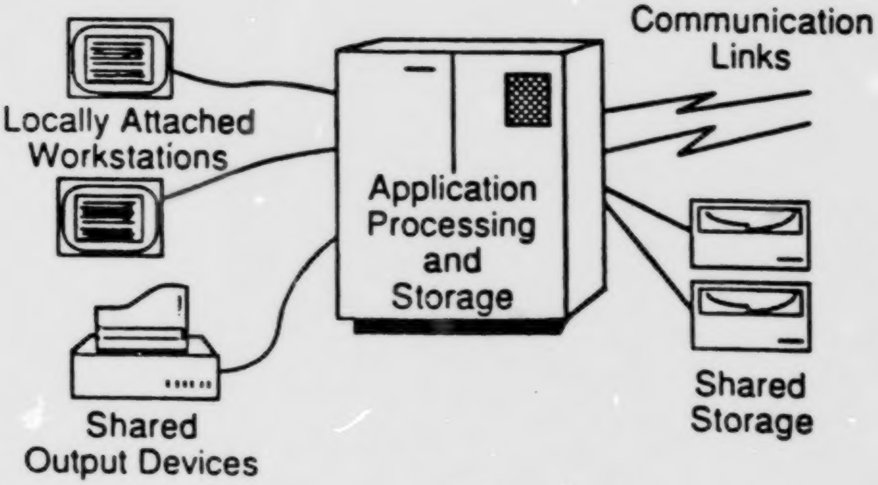
Building Block Configuration -



Definition -

Integration around a shared processor with locally attached workstations, storage system, and communication , supporting concurrent applications.

Example -

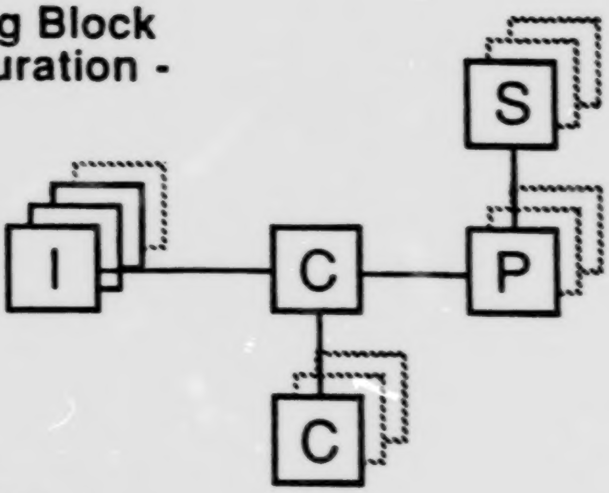

Communication
Links
Locally Attached
Workstations
Application
Processing
and
Storage
Shared
Storage
Shared
Output Devices

© DMR Group Inc.

Architectural Construct 4

SWITCHING SYSTEM

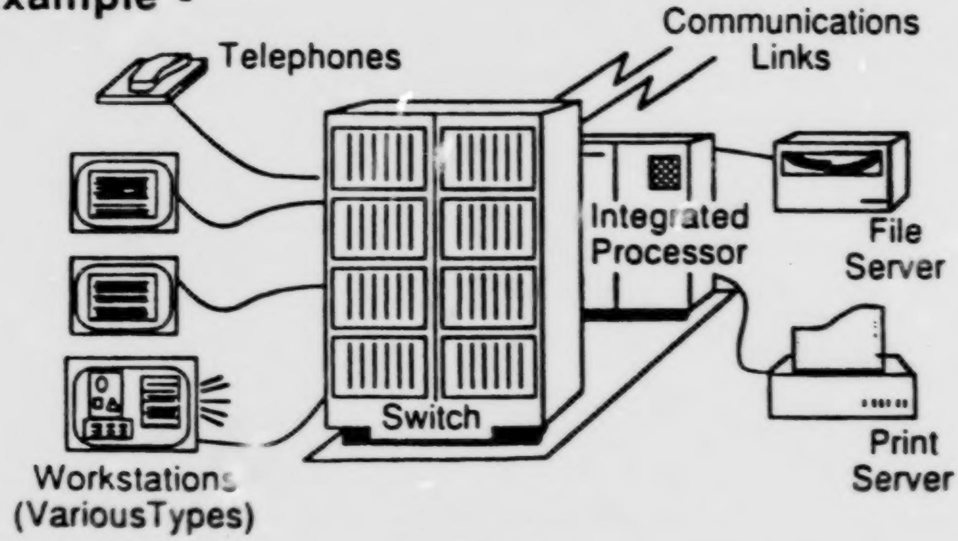
Building Block Configuration -



Definition -

Integration around a digital PBX or intelligent front-end processor with an attached application processor, supporting a variety of terminal types, and connecting to external network(s).

Example -


Telephones
Communications Links
Integrated Processor
File Server
Print Server
Switch
Workstations (VariousTypes)

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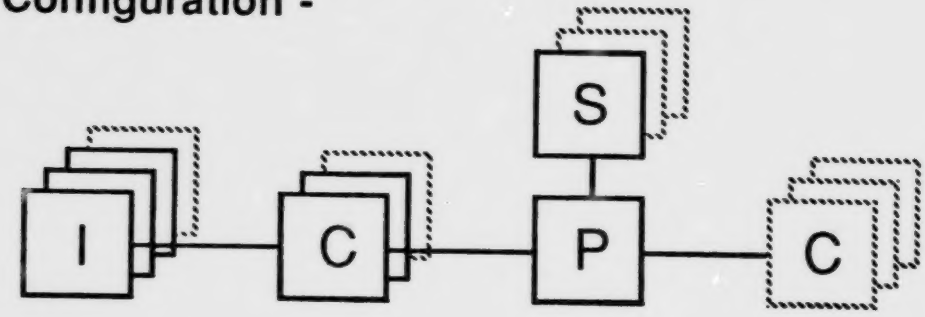
Architectural Construct 5

CENTRALIZED PROCESSOR

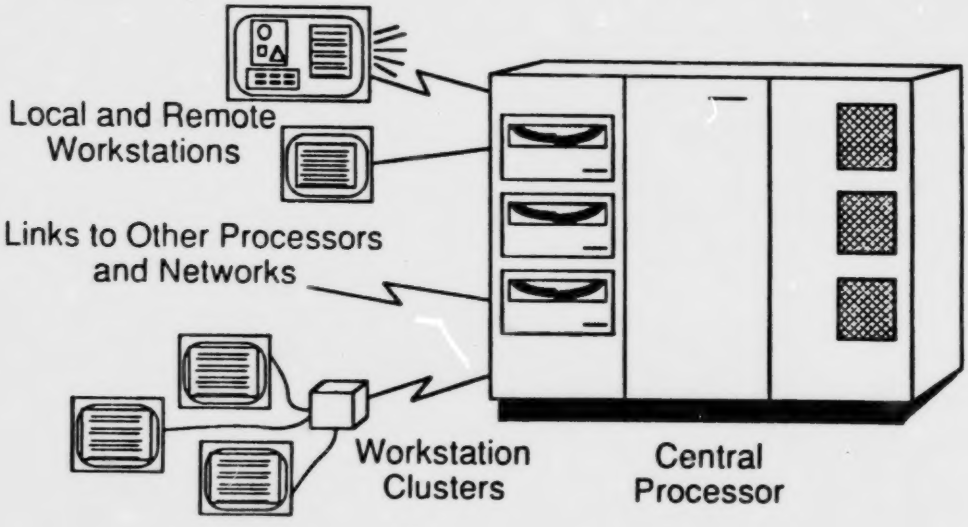
Building Block Configuration -



Definition -

Integration around a centralized processor supporting a network of remotely and locally clustered workstations, providing attachment to other networks if required.

Example -


Local and Remote Workstations
Links to Other Processors and Networks
Workstation Clusters
Central Processor

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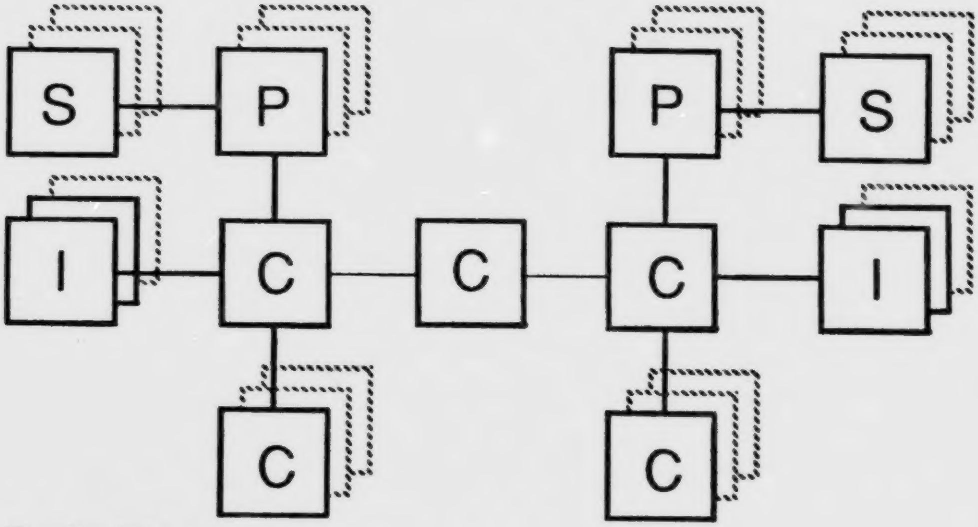
Architectural Construct 6

INTEGRATED NETWORK

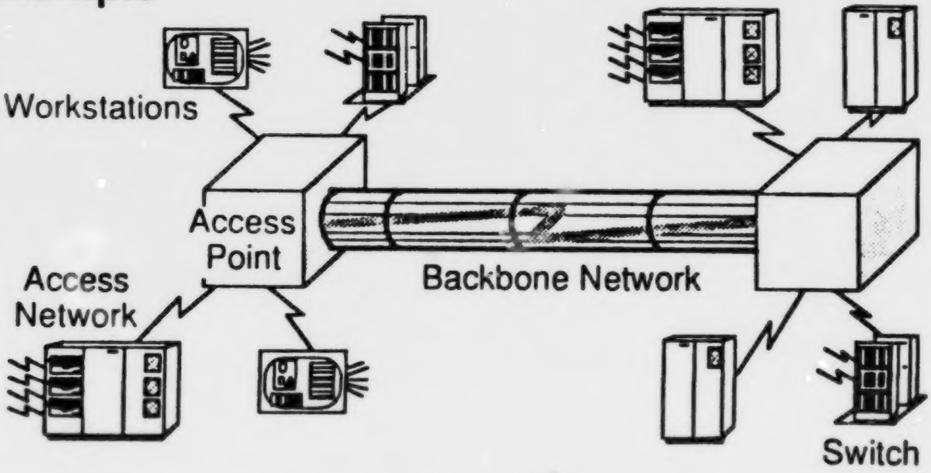
Building Block Configuration -


S
P
P
S
I
C
C
C
I
C
C

Definition -

Integration around a communications trunk, providing interconnection of a variety of workstations and processors, and utilizing access networks.

Example -


Workstations
Access Point
Access Network
Backbone Network
Switch

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THE PROMISE OF ISDN

- An extension of eventual replacement of the public switched telephone network
- Combines previously separate voice and "data" communications networks
- Communications capacity (bandwidth) on demand through a wall jack
- Eventual universal access

Dependencies -

- Finalization of standards definition
- Major hardware/software investment by carriers
- Adoption by industry vendors for terminal and system equipment
- User demand?

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DMR

Summary
ARCHITECTURAL CONSTRUCTS

Icon Representations -

1.

Multi-Function Workstation

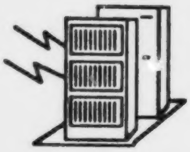
2.

Common Cabling System

3.

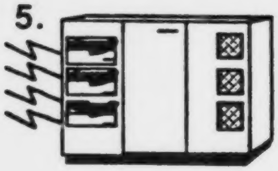
Departmental Processor

4.



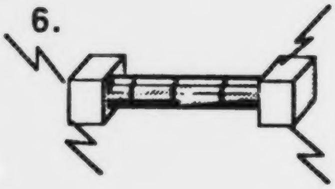
Switching System with Integrated Processor

5.



Centralized Processor

6.



Integrated Network

- Each construct has strengths and weaknesses.
- Constructs will be increasingly used in combination.
- "Ultimate solution" could involve all six.
- Each may be implemented in private or public domains.
- Each has its vendor proponents.
- Mixing and matching of constructs is a major technical challenge facing integration.

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SURVEY ASSESSMENT

Entering a Period of Major Transitions...

- Workstation penetration
- A shift from data processing to end-user orientation
- Introduction of multiple architectures
- The emergence of voice and image integration

Involving major expenditures and high management expectations, and...

Facing many obstacles

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MAJOR INTERVIEW FINDINGS

This transition period is being entered with VERY LITTLE PLANNING!

This includes:

- Strategic direction setting
- Requirements planning
- Architecture and network planning, and
- Organizational planning

And, there is an absence of appropriate PLANNING METHODOLOGIES

The Result... HIGH RISK!

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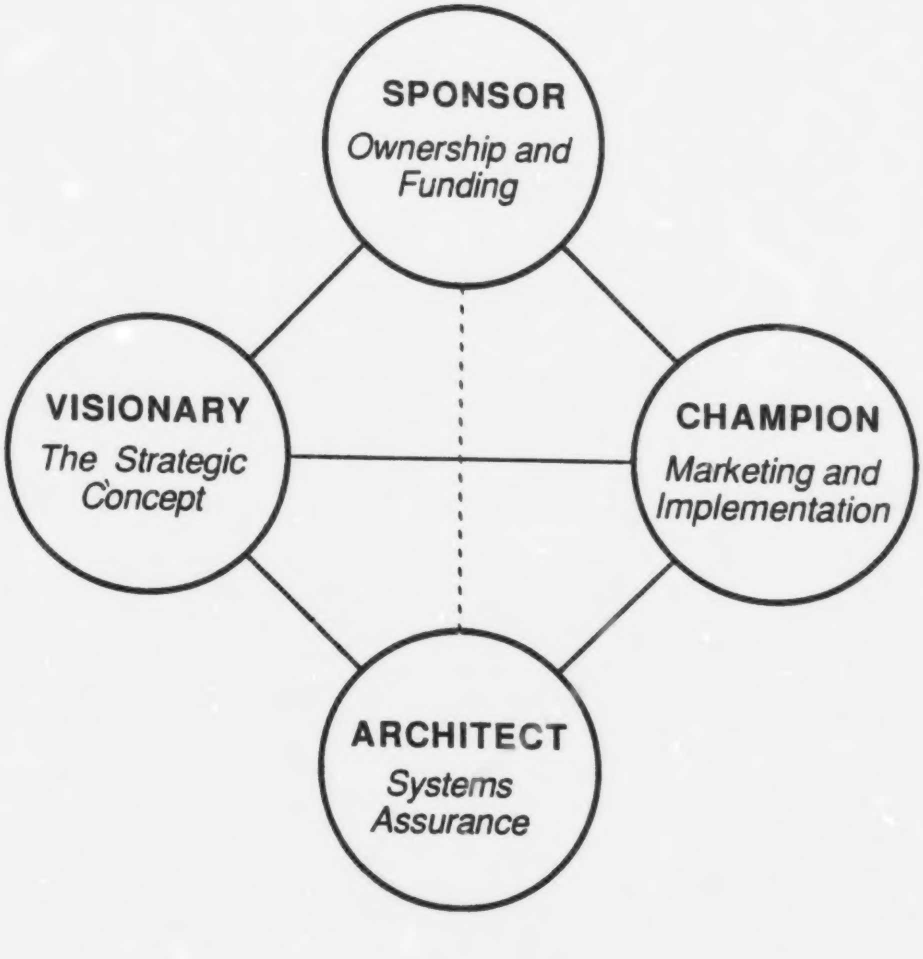
THE STRATEGIC MANAGEMENT TEAM

Key Roles...



SPONSOR
Ownership and Funding

VISIONARY
The Strategic Concept

CHAMPION
Marketing and Implementation

ARCHITECT
Systems Assurance

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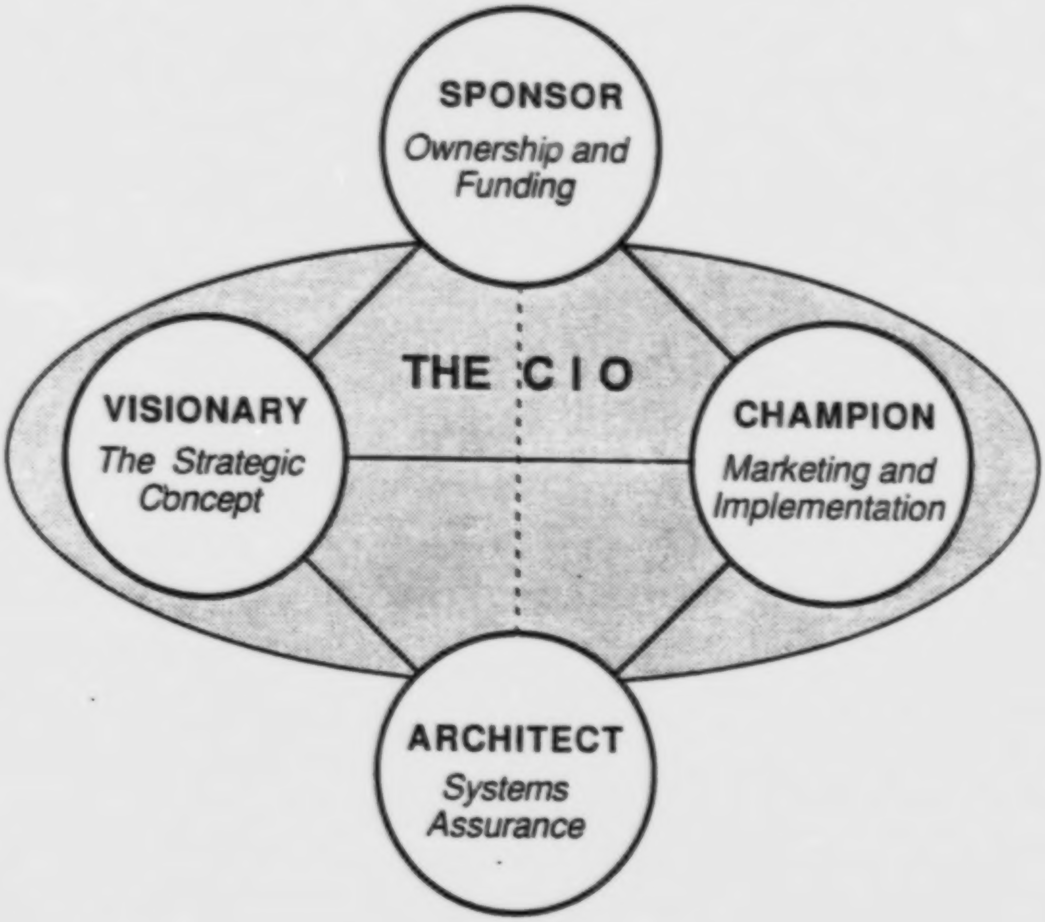
THE STRATEGIC MANAGEMENT TEAM

Key Roles...


SPONSOR
Ownership and Funding
THE C I O
VISIONARY
The Strategic Concept
CHAMPION
Marketing and Implementation
ARCHITECT
Systems Assurance

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Status Report on ISD's Communication Study

Presented by
Danny Keizer

Beginnings

Purpose
- Address connectivity issues
- Develop internal expertise
- Keep up with market developments
- Address "non–standard" requirements
- Transfer benefits of knowledge and experience to clients

Start–up "needs"
- Centennial Building Cabling
- HRIS terminal access
- Wang "connectivity"
- PC "connectivity"

What do we do?
- Look at ISD
- Examine "trends" in other organizations
- Examine "Departmental" needs

Communications Survey

Eight representative Departments involved
- Board of Management
- Comptroller's Office
- Education
- Health and Community Services
- Income Assistance
- Labour
- Natural Resources
- Transportation

Common concerns identified
- PC connections to other systems
- Terminal access to HRIS (IBM)
- Province wide networking of "non–Sperry" equipment
- Connectivity and Information Exchange between incompatible systems

Work Plan

- PC Asynchronous Communications
- PC / Sperry Terminal Emulation and File Transfer
- HRIS Terminal Access
- PC / IBM Terminal Emulation and File Transfer
- Multi–vendor Networking
- Information Exchange
- Centennial Building Cabling
- Translation Bureau, Queens Printer, NBIS access

Work Plan Status / Progress

PC Asyncronous Communications

Five "general" packages selected for evaluation

- Microsoft Access
- Crosstalk XVI
- Blast
- Smartcom II
- Procomm

Research centered around

- Features
- Ease of use
- Performance

Report available

- Basic asynchronus concepts
- Mini product evaluations
- Recommendations according to functional requirements

Procomm the first choice in each category

Results of site licensing questionnaire disappointing

Work Plan Status / Progress

PC / Sperry Terminal Emulation and File Transfer

Several Products Considered

- Terminal Emulation
  - Sperry STEP II
  - Computer Loigics PEP
  - ICC Intercom 500/500C

- File Transfer
  - Sperry On–line Transfer
  - Computer Logics FTU Professional
  - KMSystems QTRAN
  - ICC Intercom 600/600C and 600S
  - Performance Software Masterlink/1100

Work Plan Status / Progress

PC / Sperry Terminal Emulation and File Transfer

Evaluation by Data Centre Staff, considering

- Network Integrity
- Security considerations
- Error detection and recovery
- Ease of Use
- Features
- Performance
- Unattended operation
- Vendor support

Work Plan Status / Progress

PC / Sperry Terminal Emulation and File Transfer

Recommendations

- Terminal Emulation:
  PEP
  Intercom 500 with 1000 adapter

- File Transfer: Intercom 600 and 600S

Recommended products will be supported by the Data Centre

- PC configuration assistance

- Telephone trouble–shooting

- Mainframe software support

Work Plan Status / Progress

HRIS Terminal Access

Board of Management HRI Branch and ISD's HRIS project team have recommended an IBM SNA network for the Fredericton area, involving

- IBM 3274 / 3174 Controllers
- IBM 3191 Terminals
- IBM 4224 Printers
- IBM PC's running the IBM PC 3270 Emulation Program
- IBM S/36's equipped with IBM hardware / software for emulation of a controller

Work Plan Status / Progress

HRIS Terminal Access

ISD's Data Centre will provide support for the recommended configuration

All HRIS user documentation is being written for the 101 key 3191 keyboard which, other than key labels, is the same as the Enhanced PC keyboard

Board of Management is paying all costs up to the desktop

Work Plan Status / Progress

HRIS Terminal Access

Other devices can attach (but keyboard ovelays will be required and the Data Centre cannot, in general, provide the same level of support)

- Sperry Terminals
- Asynchronous Devices through the Department of Labour's Perle Protocol Converter
- ISD's Wang VS 65
- Board of Management's Wang Alliance
- PC's with DCA's IRMA (ISD HRIS team)

Work Plan Status / Progress

HRIS Terminal Access

Remaining Issues

- Access from other areas of the province
- PC File Transfer
- Other IBM Applications

Work Plan Status / Progress

PC / IBM Terminal Emulation and File Transfer

True Evaluations have not been done

Some products have been looked at

- Coaxial Attachment
  - Forte ForteGraph
  - IBM PC 3270 Emulation Program with the IBM 3278/79 adapter card
  - Computer Logics COAXXSYS
  - DCA IRMA

- Modem Attachment
  - IBM PC 3270 Emulation Program with the IBM SDLC card
  - Computer Logics SNA 3270

- Protocol Conversion and Asynchronous terminal emulation
  - Perle in Department of Labour
  - IBM 7171 at UNB

Work Plan Status / Progress

PC / IBM Terminal Emulation and File Transfer

File Transfer

- McCormack and Dodge's PC–Link preferred by HRIS team for use with HRIS application
- Most Emulators have associated transfer software

Will be considered further when a province wide approach to IBM networking is defined or when HRIS moves to provide transfer services

Work Plan Status / Progress

Multi–Vendor Networking

DMR involved with us in looking at this issue

Requirements have be assessed but not quantified

- Non–Sperry Terminal Attachment outside of Fredericton
  - IBM HRIS
  - HP 3000
  - DEC
  - NCR
  - Wang

- Interconnection between "systems"

- Universal Workstations

- Variable Capacity

Work Plan Status / Progress

Multi–Vendor Networking

Three Architectures and one "Approach" identified for further consideration

- "Sperry" Backbone
- "IBM" Backbone
- "OPEN" Backbone
- Multiplexed parallel networks

Work Plan Status / Progress
Multi–Vendor Networking

Project continues with target date of June 30 for selection of an alternative and development of an action plan

Results will feed the "Technology Strategy" project

More detailed presentation tomorrow

Work Plan Status / Progress

Information Exchange

Requirement identified for the exchange of Data, Documents and Mail across system and vendor boundaries

Report under development considering

- Approaches in use within NB Gov't today
  - Media Conversion
  - Format Translation
  - File Transfer with or without Format Translation
- Industry trends
  - Mainframe based
  - Bridges / Gateways
  - Support for International Standards
- Available products
  - Softswitch
  - Bridges from Wang, DEC, etc.

Report to be available in May

Work Plan Status / Progress
Centennial Building Cabling

The Task: Retrofitting a building designed in the early 60's to accomodate data cabling requirements for the 80's and beyond

Original building design
- Small (13 cm x 3.5 cm) trays
- Conduit between floors

Problems with Coaxial Cabling
- Wang dual coax
- IBM 3270 coax

Work Plan Status / Progress
Centennial Building Cabling

Solutions:

"Smaller Wires"

or a

"Magic Wire"

Work Plan Status / Progress
Centennial Building Cabling

WangNet – the "Magic Wire"

Feature rich Broadband Lan

Severe performance problems with OIS and Alliance systems

Component reliability problems

Other services still under research

Work Plan Status / Progress

Centennial Building Cabling

Twisted Pair – "Smaller Wires"

Telephone type wiring

Point to point connections

With baluns, supports

- Wang dual coax to 600'
- IBM 3270 coax to 1200'
- IBM S/36 and S/38 twinax

With LDS's, supports asynchronous terminals from HP, DEC, Wang, Prime, NCR, etc

With LDS's, supports connections from Sperry TMUX to synchronous terminals

Work Plan Status / Progress

Centennial Building Cabling

Twisted Pair the winner – for now

Predictable start–up and moving costs

Several Wang terminal connections and all IBM 3270 coax connections in the building use twisted pair now

Slight architectural changes to facilitate more connections between wings and between floors

Future capacity

Current floor trays to be used for distribution with ceiling space for overflow

Facility to be available this fall

Work Plan Status / Progress

Translation Bureau, Queens Printer, NBIS Access

Ability to exchange documents electronically depends on having the right equipment / software

Translation Bureau
  - Wang WPS
  - Blast (asynch)

Queen's Printer
  - Wang WPS
  - Various asynch

NBIS
  - FIDO bulletin board (asynch)
  - A variety of others using "Shafstall convertor"

ISD can help you get there
  - Keyword 7000
  - Wang WPS transfers

Other services provided as required

Work Plan Status / Progress

Translation Bureau, Queens Printer, NBIS Access

Report available

- outlines current services
- indicates futures
- provides contact names

Wang Communication Activities

SNA attachment to IBM 4381 from VS 65

ISD Mail network

Asynchronous access to VS 65
- 2110 Workstations
- PC's running VSCOM or VSTERM

WangNet WangBand

64

Futures

PC Lan evaluation

Completion of Multi-vendor networking project

IBM Access and File Transfer

Information / Mail exchange

Wang connectivity products

Other Client Needs

An Overview of DMR's Communication Study

Presented by
Blaine Atkinson

PRESENTATION
ON

DMR'S SYNDICATED STUDY - "THE INTEGRATION OF DATA, TEXT, VOICE, AND IMAGE"

DELIVERED
TO
N. B. GOVERNMENT INFORMATION SYSTEMS CONFERENCE
APRIL 22, 1987

by
BLAINE ATKINSON
DMR GROUP INC.

DMR

THE
SYNDICATED
STUDY

" THE INTEGRATION OF DATA, TEXT, VOICE and IMAGE "

PARTICIPANTS:

CANADIAN:

- PRIVATE SECTOR COMPANIES
- PUBLIC SECTOR ORGANIZATIONS
- INDUSTRY VENDORS

DMR

PURPOSE

TO ADDRESS THE BUSINESS IMPACT, FROM A CANADIAN PERSPECTIVE, OF THOSE TECHNOLOGIES THAT SUPPORT THE INTEGRATION OF INFORMATION IN ITS MULTIPLE FORMS - DATA, TEXT, VOICE, AND IMAGE

DRIVING FORCES

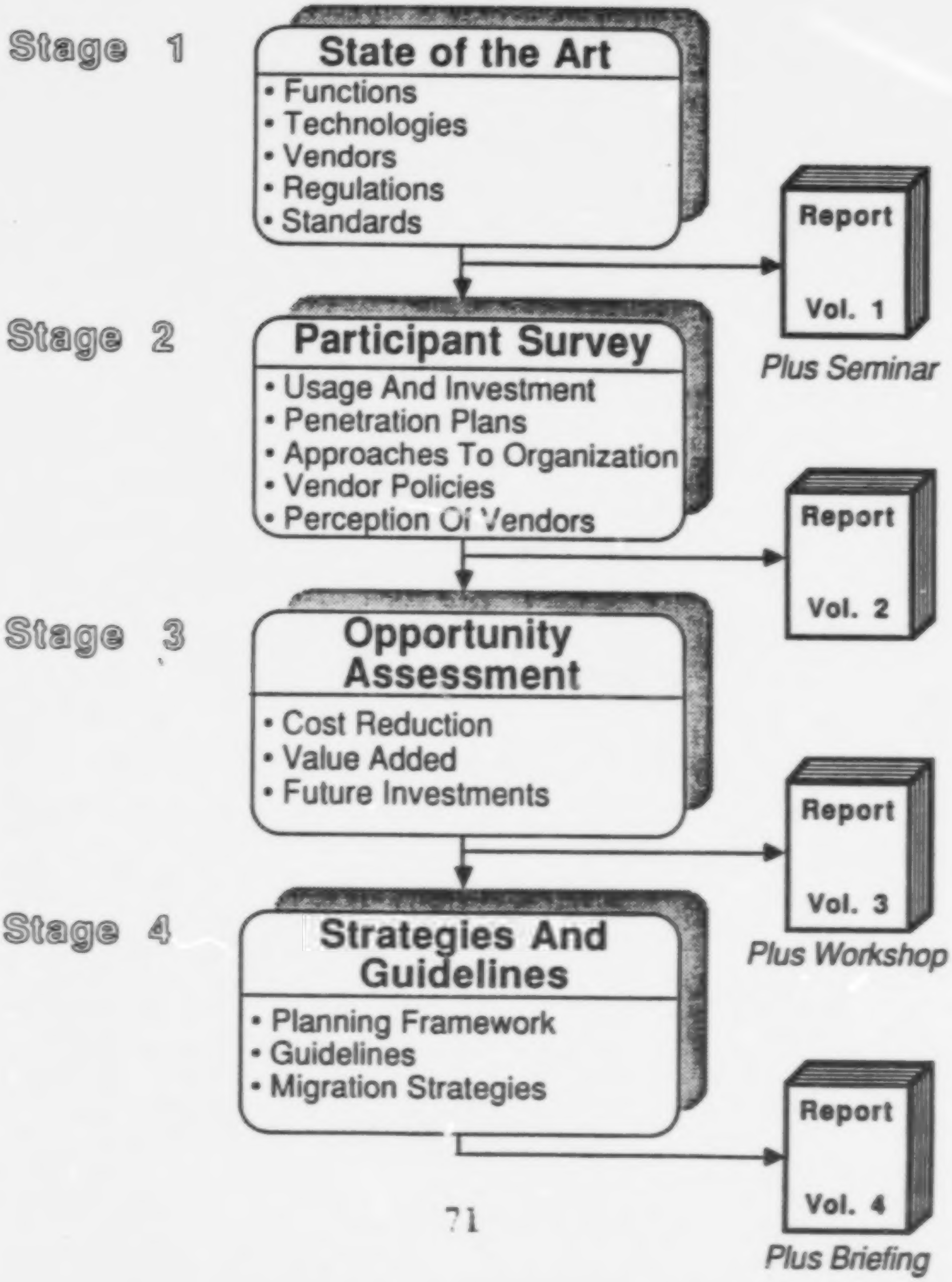
- COST REDUCTION
- ADDED VALUE
- FUTURE INVESTMENTS

STUDY CONTEXT

- NATION-WIDE PARTICIPATION
- 101 SUBSCRIBERS
- 28 VENDORS INTERVIEWED
- 1,600 SENIOR MANAGERS SURVEYED
- 36 STUDY TEAM MEMBERS/CONTRIBUTORS
- STUDY WINDOW –
  JUNE 1986 TO SEPTEMBER 1987

STUDY

PHASES



Stage 1

State of the Art

- Functions
- Technologies
- Vendors
- Regulations
- Standards

Report
Vol. 1
Plus Seminar

Stage 2

Participant Survey

- Usage And Investment
- Penetration Plans
- Approaches To Organization
- Vendor Policies
- Perception Of Vendors

Report
Vol. 2

Stage 3

Opportunity Assessment

- Cost Reduction
- Value Added
- Future Investments

Report
Vol. 3
Plus Workshop

Stage 4

Strategies And Guidelines

- Planning Framework
- Guidelines
- Migration Strategies

Report
Vol. 4
Plus Briefing

STAGE 1 -
STATE OF THE ART

- o JULY-SEPTEMBER 1986
  - MAJOR DATA COLLECTION EFFORT, VENDOR INTERVIEWS, INDUSTRY RESEARCH, ETC.
- o OCTOBER 1986
  - PARTICIPANT SEMINAR (OTTAWA)
- o DECEMBER 1986
  - STAGE 1 REPORT DELIVERED TO PARTICIPANTS

STAGE 2 -
PARTICIPANT SURVEY

- NOVEMBER 1986
  - MAJOR PARTICIPANT SURVEY OF CURRENT USE AND PLANNED USE OF INFORMATION TECHNOLOGY
  - SURVEY OF SENIOR MANAGEMENT VIEWS ON THE SUBJECT
  - 90-95% RESPONSE RATE
- APRIL 1987
  - STAGE 2 REPORT BEING DELIVERED -
    - OVERALL FINDINGS
    - INDIVIDUAL SUBSCRIBER RESULTS

STAGE 3 -

OPPORTUNITY ASSESSMENT

- o NOVEMBER 1986 - JANUARY 1987
  - STAGE 3 INTERVIEWS TO DISCUSS CURRENT THRUSTS, OPPORTUNITIES, AND EXPERIENCES
  - VISITED ADVANCED USERS TO OBSERVE PLANNED AND ACHIEVED RESULTS

- o MARCH 1987
  - STAGE 3 WORKSHOP (OTTAWA)
  - REVIEWED ACTUAL CASE HISTORIES AND FRAMEWORK FOR ASSESSING THE STRATEGIC APPLICATIONS

- o MAY 1987
  - STAGE 3 REPORT TO BE DELIVERED

STAGE 4 -

STRATEGIES AND GUIDELINES

- JUNE-SEPTEMBER 1987
  - STAGE 4 PARTICIPANT BRIEFING
    - ONE DAY
    - IN PARTICIPANT'S LOCATION

- JUNE/JULY 1987
  - STAGE 4 REPORT TO BE DELIVERED TO PARTICIPANTS

EMERGING TRENDS AND INFLUENCES

- o TECHNOLOGY PUSH

SYSTEMS (THE SOLUTION)
OUTWEIGH
APPLICATIONS (THE DEMAND)

DMR

EMERGING TRENDS AND INFLUENCES

- ARCHITECTURES
  - MULTI-FUNCTION WORKSTATIONS
  - COMMON CABLING SYSTEMS
  - DEPARTMENTAL PROCESSORS
  - SWITCHING SYSTEMS WITH ATTACHED PROCESSORS
  - CENTRALIZED PROCESSORS
  - INTEGRATED NETWORKS

EMERGING TRENDS AND INFLUENCES

o VENDORS AND INDUSTRY

- EXPERIENCING TOUGH TIMES
- EXPECT MORE ALLIANCES AND ACQUISITIONS
- OPENING OF PROPRIETARY ARCHITECTURES
- WANT MARKET FEEDBACK
- NOT WAITING FOR STANDARDS
- INDUSTRY NEED FOR NATIONAL POLICY ON COMMUNICATIONS SERVICES TO ENSURE:
  - **UNIVERSAL ACCESS TO CAPACITY ON DEMAND AT REASONABLE COST**

EMERGING TRENDS AND INFLUENCES

- MARKET ACCEPTANCE
  - WILL BE THE PREDOMINANT FACTOR IN SHAPING THE FUTURE OF THE INTEGRATED SYSTEMS INDUSTRY
  - NEED FOR INCREASING AWARENESS THROUGH ACTUAL EXPERIENCE
  - NEED FOR LEADERSHIP AND DIRECTION
  - "INTEGRATION" IS NOT AN END IN ITSELF

"Etherlink Local Area Network Installation"

Written by Janet Digdon
Presented By Emilia Sousa

Etherlink Local Area Network Installation

April 22, 1987

Written : Janet Digdon

Presented : Emilia Sousa

1. Introduction

The aim of this paper is to describe the installation of local area networks (LANs) which are being installed for the Department of Transportation in each of its twelve districts. In particular, the local area network which was installed in Moncton in April 1987 will be discussed.

The networks are required to implement a stockroom inventory system in each district. The inventory database must be used by both stockmen in the district's stockroom and a clerk in the district's head office. The file sharing capabilities of local area networks and their relatively low cost are the reasons why the inventory system will be implemented on a LAN.

Etherlink Series, a brand of network hardware produced by the 3Com Corporation, will be used with Advanced Netware 286 network software by Novell Inc., on the inventory local area networks.

An introduction to local area networks and their components will be presented, followed by a detailed description of Etherlink network hardware and Advanced Netware network software. Problems encountered in the first local area network installation in Moncton will be discussed. Lastly, a brief comparison of this network to the IBM PC network, currently in operation at the Department of Transportaion, will be made.

2. What is a local area network?

A local area network is a high speed computer network which can be shared between a number of users. It is termed local in the sense that these networks are limited in geographical area. Generally, a local area network cannot exceed one or two kilometers. A central node or processor is not required for communications between computers in a local area network.

Computers in a local area network are able to communicate with each other. This communication makes possible the sharing of applications, information, and various hardware devices which would otherwise be limited to one computer and one user. By sharing, it is meant that more than one user may run the same application and access the same files simultaneously. Some of the hardware devices which are commonly shared on a LAN are disk drives, tape drives, high speed printers, and plotters. The ability to share resources among several users is one of the reasons local area networks are becoming popular.

The local area networks discussed in this paper will be limited to those LANs which contain only microcomputers. This is not meant to imply that local area networks are limited to microcomputers, for they may consist of any combination of microcomputers, mini computers, and mainframes. Rather, the terminology and components discussed in the remainder of this paper apply to those local area networks which are comprised solely of microcomputers.

2.1 Components of a local area network.

In order for microcomputers to communicate with one another in a LAN, they require several components. The following is a discussion of some of the components which are found in many local area networks. This list is not meant to be complete for all local area networks but will explain some of the equipment discussed in this paper.

2.1.1 Workstations.

A workstation is a microcomputer which is connected to the local area network. The microcomputer may contain any number of floppy and hard disk drives or may contain no internal disk drives. At the workstation, a user may run applications directly from any local drives or may access information and applications which are shared on the network.

2.1.2 File Servers.

A file server is a more powerful workstation which is capable of sharing its files and attached peripherals amongst the workstations attached to the network. Generally, a file server contains a large internal hard disk or has additional external hard disk drives attached to it. It is on these drives that the applications and files shared on the network are stored.

Communications and file management software enable the file server to share its resources with other workstations. This software is known as the network operating system.

Most file servers are dedicated to servicing network requests but on some smaller networks, may also be used as workstations.

2.1.3 Local area network hardware.

LAN hardware consists of all the materials required to physically connect each computer and device to the network. These materials include: cables, network adapter cards, various devices used to connect the cables to each other and to microcomputers, translator devices, and cable terminators. The LAN hardware is responsible for all low level communications between peripherals.

2.1.4 Network operating systems.

Network operating systems work in conjuction with the operating systems already on the microcomputer to service all network file sharing requests. It also services all network device sharing requests. The network operating system makes access to shared network files seem invisible to the end user.

2.1.5 Application Software.

Application software on a network is comprised of all word processing, database management, spreadsheet, and user written programs which are used on the network. Applications may be located on the file server or on the individual workstations, but only those which are located on the file server may be shared on the network.

2.1.6 Gateways or bridges.

Gateways are used to connect one local area nework to another. A dedicated file server or workstation, which contains special software and hardware, allow the networks to interact. The primary use of a gateway is to overcome LAN restrictions in geographical area.

2.2 Topologies used in local area networks.

Computers in local area networks may be connected to one another in a few different ways. Each form of connection is termed a topology. Topologies influence how the computers will communicate with one another. Essentially, there are three topologies used in local area networks, broadcast bus, ring, and star.

2.2.1 Broadcast bus.

Broadcast bus, or more commonly, bus networks, consist of one long cable into which all computers tap. The cable may consist of secondary wires which connect the main cable to each computer on the network, or the cable may consist of separate pieces of cable which connect one computer to the next on the network. In this type of network, one computer sends a message while all other computers listen simultaneously.

2.2.2 Ring.

Ring networks are similiar to bus networks in that they have a single cable but the ends of the cable are connected to form a continuous ring. Messages are transferred from computer to computer on the network until the message has made the complete loop. Each computer takes an active part in transferring all messages. Note that only the computer that the message is for, acts on the contents of the message.

2.2.3 Star.

Star networks have a connection between each workstation and the file server. Each workstation has unrestricted access to their individual line, it is the file server's responsibility to queue and service requests.

3. Etherlink series network hardware.

The Etherlink series of network hardware by the 3Com Corp. is an ethernet network. Ethernet is a international standard in communications. This bus network which operates on a 10 mega bits per second (Mbps) coaxial cable, uses baseband signalling. Carrier sense, multiple access with collision detection (CSMA/CD) is the protocol used to transmit messages on the network.

3.1 Installation of an etherlink network.

The installation of an etherlink network is not a hard task, even for one who has never installed a network before. In order to best describe the process, it will be broken down into each step or phase required to complete the installation.

3.1.1 Install and test network adapter cards.

Each workstation and file server on the network must have a network adapter card installed in one of its expansion slots. In order to test that each adapter card will function properly in the microcomputer it will be installed in, 3Com provides a test diskette. To perform the test, the card must be placed into an expansion slot of the computer, a loopback connector must be connected to the card, and the computer must be booted and tested with the diskette. The test requires only that the user types the name of the test and observes the results on the screen. If the test fails, there are jumpers on the adapter card which may be changed to make the card compatible with other expansion cards already in the computer.

The test is a quick way to make certain the card will work in the computer before the network is in place. When the entire network is in place it is much harder to locate the source of a network problem.

3.1.2 Installing cables.

The cables used for an Etherlink network may be thick or thin coaxial cable. Thick coaxial cable is more expensive but permits a longer network. The maximum length of an Etherlink network run on thick coaxial cable is 2.5 kilometers (8202 feet) and on thin, 0.914 kilometers (3000 feet). For the inventory networks, the distance will never exceed 3000 feet so thin coaxial cable will be used. Thin coaxial cable comes in pre-cut lenghts of 7, 15, 30 and 200 metres. To lengthen a cable segment, a BNC barrel connector is used. Both thick and thin coaxial cable may be used in the same network to obtain optimum value.

Since a cable must connect one computer to the next on the network, the first step in installing the cable is to determine the path the cable will follow. This task should be done before any equipment is ordered to ensure the proper cable lengths are obtained. Once the path is known, the cable must be strung from one computer to the next. To string the cables it is often necessary to drill through obstacles such as cement floors and walls. Running the cables is the most time consuming portion of the network hardware installation. Care must be taken to ensure cables are run in places where they cannot be damaged.

3.1.3 Attaching microcomputers to the cable.

Each computer on the network must be connected together by means of cables. In order to make this connection when using thin coaxial cable, a t-connector is used. T-connectors have three ends: the first connects to the network adapter card at the back of the computer, the other two ends connect to the coaxial cable. The first and last computer in the network have only one cable connected to their t-connector. The t-connector simply twists into the end of the cable.

3.1.4 Completing the installation.

To complete the Etherlink network installation, each end of the network must be terminated. A terminator kit, consisting of two ends which attach to t-connectors, is used to terminate the network. Each end contains a 50 ohm resistor which network hardware recognizes as the end of the cabling. One end connects to the t-connector on the first computer on the network and the other end, to the last computer. The terminators help the joined cable segments to act as one continuous cable.

3.2 Remarks on the hardware installation.

In Moncton, district 3, the hardware installation went smoothly. In one day, a network consisting of four workstations and a file server was installed. Running the cables to connect the computers together required the most time because several floors and walls had to be drilled through.

The adapter card test revealed that an old Corona hard disk microcomputer which was to be connected to the network was not compatible with the adapter card. There was a conflict with the network adapter card and the hard disk controller card which could not be resolved by changing jumper settings. To rectify this problem, the computer was exchanged for a newer Corona hard disk computer.

4. Novell Advanced Netware 286.

Advanced Netware 286 is a network operating system which is made by Novell Inc. Presently, it is acclaimed to be the best local area network operating system on the market. Advanced Netware has several features which make it a wise choice when choosing a network operating system. It is easy to install and most network commands are menu driven which permits a user to learn to use the network quickly. Special security features can be used to limit the access to files and directories to certain people, or groups of people. Novell also supports several hardware configurations and may run on a network which contains more than one type of network hardware.

The Advanced Netware 286 package, a network operating system for 80286 based computers, contains 19 diskettes used to configure and run the network. There are several different manuals which may be used as guides to the many network functions. Additionally, the network package contains supplements to guide in the installation of the several different types of network hardware it supports.

Novell Advanced Netware 286 may only be installed on one file server. To ensure that this copy protection is not violated, a keycard which matches the software serial number must be installed in the file server.

4.1 Installation of the network operating system.

The installation of Advanced Netware 286 is menu driven and explained fully in the installation guide. Before the software can be installed on the file server, its hard disk drives must be formatted using the Netware software. The disk format also includes a surface and comprehensive analysis of the hard disk which requires at least 20 hours to fully test each disk.

The keycard must be installed in one of the file server's expansion slots before any network software can be installed. It is recommended that the keycard be installed at the same time the network adapter card is installed.

It is not necessary to describe the installation of the operating system since the process is menu driven and requires only that the person configuring the system has read the installation guide and inserts the correct diskette when prompted. The installation is time-consuming because hard disks must be formatted and fully tested, but is none the less simple to perform.

4.2 Setting up the network environment.

After the network software has been installed on the file server, the operating environment for the network must be established. This operating environment includes the users which are to have access to the network, the directories which are to be created on the file server, and the files to be stored in each directory. The environment also includes the access users are to have to the various files and directories located on the file server. There are menu driven utilities which perform the above functions.

Customizing the network for an organization's particular needs is an ongoing task unless the needs of the organization remain static. To add a computer to the network requires a microcomputer, an adapter card and some cable. The computer may be placed on either end of the network moving the terminator to the new computer or any place in the network where it can be connected easily to two different computers. As the number of workstations on the network increases and subsequently the speed of the network decreases, it is wise to consider adding another file server which will improve the network speed. To add an additional file server to the network, another copy of Advanced Netware is required.

5. Problems encountered during the network installation.

The installation of the local area network for the inventory system in Moncton went very well considering it was the first network to be installed. Still, there were a few problems which were encountered over the week long installation.

Before the installation in Moncton, a few of the Advanced Netware diskettes were used to generate the operating system and the network shells. One of the diskettes in the Novell package was faulty and could not be used. Thankfully a copy of this diskette could be made from Computerland's diskette and used in the network installation. Only the operating system or system diskette is copy protected to match the keycard.

Some older versions of Corona personal computers are not compatible with the Etherlink adapter cards as was mentioned earlier in this paper.

The keycard which must be installed in the file server could be the source of a very serious problem. If the coating on the center chip on the card touches both ends of the capacitor beside it, the file server could blow up. Luckily our keycard was safe to install. It should be noted that Novell does not include any warnings of this problem in its documentation.

Photographs of the local area network were taken to illustrate the installation procedures. As a result of removing the keycard from the file server to photograph it, the network would not work for several minutes. All the cable connections had to be tightened and the file server rebooted a number of times to make the network function.

Three days after the installation was completed, the network failed to start. A loose connection or bad cable was suspected to be the cause of the problem. Novell supplies a test called syscheck which may be used to determine which computers on the network are able to communicate, thus indicating which connections are still operating. This test indicated that no computers on the network could communicate with one another. After a physical test, it was determined that one cable stopped functioning. Syscheck is not able to function if any of the cables on the network do not work. This test is misleading and cannot accurately be used to locate network problems.

6. Etherlink network using Advanced Netware 286 vs. IBM PC network.

An IBM PC network was installed at the Department of Transportation in Fredericton in 1986 and has been in operation since. The Etherlink network installed in Moncton has only been in operation for a couple of weeks. Since the Etherlink network is so new, many of its problems have yet to occur and its full potential is not currently being used. The two networks are used as solutions to different problems and cannot be accurately compared to one another. For example there are currently five workstations and one dedicated file server on the Etherlink network with four more workstations to be added. On the PC network there are three workstations and a file server which is also used as a workstation. It is impossible to determine if one network is better than the other but it is possible to describe some of the differences in the networks which aided in the decision to use the Etherlink network.

On the PC network there are no built-in in security features which allow the access to certain files to be restricted to specific individuals. Once a directory is shared on the network all workstations with access to the file server have access to all files in that directory and to the files in each of its subdirectories. The Etherlink network running under the Novell operating system permits a user to be given or denied access to each file and directory on the file server. Additionally in the PC network, access is granted by workstation but on the Etherlink network, access is granted for each user of the network regardless of the workstation they use. The security features of the Etherlink network will help to safeguard the integrity of restricted information and applications.

The PC network runs on coaxial cable at a speed of 2.5 Mbps and the Etherlink network at a speed of 10 Mbps. The inventory system must be run at real time. The increased speed of cable on the Etherlink network improves the overall performance of the network.

Only eight computers may be run on the PC network without any expander kits. All cables on this network must be a specific length depending upon the type of expander kit being used. These lengths are longer than what is generally needed between most computers and as a result cable is wasted. The Etherlink network has a maximum of more than 250 computers per local area network. The cables used to connect the computers need not be a specific length. Cables come in lengths of 7, 15, 30, and 200 metres and may be connected together to form the closest length to the length required. Less cable is wasted in the Etherlink network.

Each computer on the PC network must run under the disk operating system (DOS) version 3.0 or greater. The Etherlink network using Novell network software, restricts the operating system to DOS version 2.0 or greater.

Any computer on the PC network, meeting certain memory requirements, may be set up as a file server machine. All computers, both workstations and file servers, must have a copy of the PC network program costing approximately $100. Only the file server on the Etherlink network is able to share its files and peripherals. Each file server must contain a copy of the

Advanced Netware operating system costing approximately $3000. Workstations do not need a copy of the software.

"Communications Experiences - Mini Network"

Presented by
Gary Fraser

COMMERCE & TECHNOLOGY

COMMUNICATIONS EXPERIENCES - MINI NETWORK

IBM S/36	1.729	Mb Main Memory
	200	Mb Disk Storage
	25-30	Devices including 3180 terminals, PC's (IBM & Sperry) with IBM local & remote 5251 emulation and AST local emulation, dot matrix and letter quality printers.

Presently have installed and operational three communication lines with a fourth to be added shortly for the HRIS project.

Line 1

- IBM refers to this as a Peer to Peer line.
- 2 IBM stand-alone Displaywriters with attached Letter Quality printers share this one line with communications restricted to one session at a time; i.e. from the S/36 both DW's have the same address and communication from a DW to the S/36 is therefore restricted to one session at a time.
- All units are on the same floor of the Centennial Building.
- Purpose - letter quality printing but procedure is cumbersome - for document to be printed at the DW, one has to initiate a communications session, retrieve a list of documents sent to the DW to ascertain one's re-labelled document name, retrieve the document on a DW diskette and then print the document. Now have a Letter Quality printer and this facility now used minimally other than to transfer DW created documents to the S/36 and also used to get S/36 documents to DW format for transfer to WANG. Unfortunately this process does not work in reverse.
- Documentation for implementation of this line was received two weeks after the local IBM representative configured the software with assistance from NSC, Toronto.
- Conclusion - it works, it's a little cumbersome and we will probably remove 1 unit from the line as still wish to get documents to a WANG.

Line 2 - Satellite operation of Department - Science & Technology Division.

- Jewett House - Secretary Lane, behind Legislative Building.
- Utilize Gandalf LDS 309, 9600 Baud leased line, IBM 5294 Controller which can handle up to 8 devices.
- Presently have 4 - 3180 terminals and an IBM PC & Quietwriter with 5250 emulation (IBM)
- Implementation - basically we followed the book, only problem was with the PC and printer combination and the self configuring procedure of the controller; i.e. nothing major.
- Conclusion - it works and works well - for the future, if and when this Division returns to the Centennial Building, we will probably still use the line as it will allow us to have additional terminals accessing the S/36. (Present configuration allows 36 devices direct connected).

Line 3 - Multi-drop line.

- Utilize Gandalf LDS 309, 9600 Baud leased line from S/36 to an IBM PC with remote 5250 Emulation at CIC on York St. and to a Zenith PC and printer with remote 5250 emulation at DRIE office on Brunswick and Regent.
- Purpose of this link is that Science & Technology Division at Jewett House administer Federal/Provincial Development Agreements for a Management Committee comprised of representatives from C&T, CIC and DRIE. The file is maintained by C&T with CIC and DRIE having view and Query access to the file.
- Security - Password based - CIC and DRIE users when accessing the S/36 are limited to a specific, limited menu. Additionally lines can be varied off from the S/36 to totally restrict access.
- Implementation - Minimum of problems - PC at CIC died first day of installation but non-related to communications. Zenith at DRIE freezes, however, we are going to substitute an IBM PC and see what happens.
- Conclusions - it works and works well.

Additional Feature - PC Support/36

- Allows transfer of files on the S/36 to a PC file like DBIII+ or Lotus 1-2-3 and subsequent data manipulation on a PC; i.e. EBDIC to ASCII conversion.

"ISD Network History"

Presented by
Drew Ingraham

NB Government Information Systems Client Conference
April 22 & 23, 1987

I.S.D. Network History

By Drew Ingraham

In the spring of 1972 the Province of New Brunswick installed an 1106 Sperry mainframe computer to handle the processing of applications such as payroll, Medicare and property tax. The 1106 had 131 kilowords of memory (a storage capacity only slightly larger than the unexpanded version of todays Sperry PC. At that time all the input to the system was done via punched cards or tape and it was not uncommon to see ten thousand cards being read into the system prior to the execution of a job.

There was no on-line communication to the Sperry host until 1975 with the acquisition of a GCS (General Communication Subsystem). The GCS revolutionized data input because now programmers could make program changes and ECL changes from a terminal in their office, thus eliminating the handling of large volumes of punched cards. ISD, at that time Data Processing, quickly got on the band wagon and by November of 1975 had a local communication network consisting of 4 - 9600 baud lines supporting 24 terminals, 3-19.2 KB lines supporting 3 remote printers and 4 dial-up lines. The host processor had also been upgraded to an 1106 Model II with 262 kilowords of memory (a storage capacity now only slightly larger than the expanded vesion of the Sperry PC/IT).

By 1979, the trend for on-line communications was flourishing; the host processor had been expanded to an 1100/81 with 512 kiloword of memory and the local network had expanded to 6-9600 baud lines supporting 43 terminals. We still maintained the 3 - 19.2 KB lines supporting 3 remote printers and 4 dial-up lines. It also became evident to us in 1979 that there were government departments in other cities that could benefit from access to a provincial communication network and the processing capabilities of the 1100 host; thus the installation of our first remote analogue communication line operating at 4800 baud and supporting one terminal in Shediac and one terminal in Moncton.

Up to this point in time, the network had been monitored and controlled by the shift supervisor operating the 1100 host; with the increased traffic and additional terminals it became evident that someone had to be dedicated to supervising the operation of the network and its attached devices. Hilly Booker became responsible for terminal control in April of 1979 and it was at this time that the communication "hot line" was established. Clients could now get immediate response to communication problems thus eleviating some of the frustrations experienced while working at a terminal. Clients became better informed as to what was causing their problem and how long it would be before their service would return to normal.

NB Government Information Systems Client Conference
April 22 & 23, 1987

I.S.D. Network History

By Drew Ingraham

By October of 1980 the local network had increased by one local line for a total of seven and the total terminal count had gone from 43 to 57. At this point in time the province had been utilizing U100 and U200 type terminals. The U100 and U200's were being leased from Sperry, however their purchase price was approximately $5000.00. The printer associated with these terminals was a Sperry 0786 and its cost was approximately $5000.00

In September of 1981 the computer room was relocated from the ground floor of the Centennial Building to the sixth floor and the 1100/81 host was upgraded to an 1100/82 with 1.5 megaword of memory. We had also acquired an additional GCS to provide a means of backup for the existing network and to handle the additional lines. The network now stood at 12 local lines (almost double that of October 1980) and four remote lines operating at 4800 baud analogue; (4 times the number of remote lines in the previous year). The number of remote printers had also grown by one to a total of four. The host now supported data bases for Motor Vehicle, Consumer Tax, Department of Social Services, Medicare, Department of Justice and Property Tax to name a few.

By August of 1982 there had been no lull in the growth of the network, everyone had an application for a terminal and everyone needed on-line service. The network now stood at 15 - 9600 baud local lines supporting 176 terminals and 6 - 4800 baud remote lines supporting 47 terminals. Remote printers had again increased by one to a total of five. As well by 1982 a new terminal had been introduced into the network, it was the UTS20. Its purchase price of $3500.00 was substantially lower than its predecessor the U200, however, its associated printer, the Sperry 0798 was priced at $7000.00

In December of 1982 the 1100/82 host was upgraded to an 1100/83 with 3 megaword of memory. The GCS's had been replaced by a new front end processor, the DCP40 (distributed communication processor 40). By now terminal control had been expanded to two people and they were providing services ranging from the processing of requests for equipment, to preinstallation planning, basic machine care/training, and shipping the receiving of defective equipment; as well as maintaining the "hot line" for client interface it was also at this time that disc storage capacity was increased and an additional high speed printer was installed to help eleviate print queing during peak printing periods.

NB Government Information Systems Client Conference
April 22 & 23, 1987

I.S.D. Network History

By Drew Ingraham

By April of 1983 the local network was at 16 - 9600 baud lines supporting 193 terminals and the remote network was at 6 - 4800 baud lines supporting 53 terminals. The remote printers had again increased by one and now stood at six.

In June of 1983 the Data Processing Division hired Drew Ingraham to assist terminal control with network problems and to look after network design. It was decided at this time that the network was expanding at a consistent rate and technical considerations should be made when providing for future network expansion. Dataroute service was now readily available to the major centers in the province; this was a digital service that provided good data integrity and excellent backup capabilities. By November of 1983 a proposal to provide all possible major centers with 9600 baud digital links was put forth. The proposal was accepted and by January of 1984 Moncton, Newcastle, Bathurst, Edmundston, and Woodstock had a dedicated 9600 baud digital link with Fredericton. The network now consisted of 20 - 9600 baud local lines supporting 272 terminals, 6 - 4800 baud remote lines supporting 47 terminals, 6 - 9600 baud dataroute lines supporting 67 terminals and 6 remote printers.

It was also in 1984 that we looked at improving the existing maintenance procedures. Up until now if a terminal became defective, the client had to disconnect the terminal, place it in a suitable shipping carton, and ship it to Fredericton for service; in turn terminal control would ship out a good working unit and the client would reinstall it on his premisis. This was a costly and slow method of problem resolution and it could result in two to three days of down time for the client. This slow turn around initiated an internal study to compare the cost vs efficiency of Data Processing doing their own maintenance, remaining with the existing Sperry maintenance, or contracting out the maintenance to a third pary maintenance group. As a result of the study and a tender for third party maintenance, the third party maintenance group of NBTEL was awarded a one year contract to service our equipment. The new maintenance agreement provided for on site service within 2 hours in Fredericton, Moncton and Saint John and 4 hour service for the rest of the province. Defective terminal equipment was swapped out on site by trained personnel and then shipped to a repair center for servicing. This left the client with a working system and no concerns as to the location or condition of the defective unit. As well by 1984 the UTS30 terminal was introduced; its cost of $3500.00 was comparable to the UTS20. However, the functionality of the terminal had increased.

NB Government Information Systems Client Conference
April 22 & 23, 1987

I.S.D. Network History

By Drew Ingraham

By March of 1985 the network consisted of 22 - 9600 baud local lines supporting 326 terminals; 6 - 4800 baud remote lines supporting 57 terminals; 9 - 9600 baud dataroute lines supporting 93 terminals. By June of 1984 we added an additional processing system; the 1100/72 to handle our Mapper application.

By December of 1985 the 1100/83 host was upgraded to an 1100/92 and the Datacenter was relocated to the ground floor of Marysville Place. Six months prior to the relocation to Marysville Place, meetings began to discuss the most effective method of extending the data services from the Centennial Building to Marysville Place. It was decided that an Amdahl 2211 TDM working in conjunction with a T1 carrier system would be used. The Amdahl 2211 is a time division multiplexer that multiplexes all the data traffic to and from the 1100 host onto a single line .. the T1 carrier. The T1 carrier is a specially designed digital carrier capable of handling large volumes of data traffic ... 1.54 MBPS. Prior to the actual move the components of the proposed system were tested and retested and on December 7 and 8, 1985 all the existing data circuits were cut to the new facility. By Tuesday, December 10, 1985 all circuits were up and running and minor alignment problems were being cleared up.

By March of 1986 the network consisted of 25 - 9600 baud local lines supporting 411 terminals. The remote network had expanded to 7 - 4800 baud lines supporting 75 terminals and 11 - 9600 baud dataroute lines supporting 143 terminals.

Growth was again consistent during the last fiscal year and by March of 1987 the network consisted of 29 - 9600 baud local lines supporting 503 terminals; 9 - 4800 baud remote lines supporting 89 terminals and 13 - 9600 baud dataroute lines supporting 251 terminals. Within the last two years we have introduced the SVT 1120 terminal at a purchase price of $1420.00 and the GE3024 and GE3210 printer at a cost of $2280.00. We have also connected a large number of PC's to the network; these PC's are running UTS20 emulation software from Computer Logics Ltd and Intercomputer Communications Corporation.

The last 14 years have been a period of continual growth and change within our Data Processing environment. From a network of 4 local lines supporting 24 terminals to a network of over 51 lines supporting 843 terminals and covering the scope of the entire province. From combined terminal and printer costs of $10,000 to a combined costs of $3700.00 from maintenance procedures resulting in 2 to 3 day down time to procedures of 2 to 3 hours down time from transmission speeds of 4800 BPS to speeds of over 1.54 MBPS.

What will the future hold?

NB Government Information Systems Client Conference
April 22 & 23, 1987

I.S.D. Network History

By Drew Ingraham

Perhaps high speed data links between cities, perhaps even lower combined terminal and printer costs, even more efficient maintenance procedures. One certainty is, we in ISD will continue to provide comprehensive technical support of our mainframe data communication networks, we will evaluate and implement new transmission technologies in an effort to ensure that the most cost effective and technologically advanced methods are used to provide data communications to our client departments.

In an age of such rapid technological change no data processing environment will be completely up to date; but as long as we work toward a common goal of cost effective data processing no one will lose.

An Overview of the Multivendor Networking Project

Presented by
Danny Keizer for Marc Bage

TABLE OF CONTENTS

page

1. INTRODUCTION 1
    1.1 Purpose of Study 1
    1.2 Purpose and Scope of Document 1
    1.3 Outline of Document 1
    1.4 Terminology 2

2. INFORMATION SYSTEMS REQUIREMENTS 3
    2.1 Functional Requirements 3
        2.1.1 Compound Document 3
        2.1.2 Shared Space 3
    2.2 Systems Requirements 3
        2.2.1 Universal Access 4
        2.2.2 Bandwidth on Demand 4

3. NETWORK REQUIREMENTS OF THE NEW BRUNSWICK GOVERNMENT ... 5
    3.1 Overview 5
    3.2 Trends 5
    3.3 Present Networks 6
    3.4 Connectivity Requirements 10

4. FUNCTIONAL CONNECTIVITY REQUIREMENTS 14
    4.1 Terminal-to-Host Session 14
    4.2 File Transfer 15

5. POTENTIAL NETWORK ARCHITECTURES 16
    5.1 Sperry Backbone Network Architecture 16
    5.2 BM Backbone Network Architecture 18
    5.3 Open Network Architecture 19
    5.4 Cost-Optimized Parallel Networks 20

6. PROPOSAL FOR ASSESSMENT OF NETWORK ARCHITECTURES 22
    6.1 Methodology 22
    6.2 Information Required 24
    6.3 Efforts and Timetable 25
    6.4 Cost of Proposed Study 25
    6.5 Deliverables 26

1. INTRODUCTION

1.1 PURPOSE OF STUDY

This study addresses the global data communication needs of the New Brunswick government. In view of the multivendor information environment, the objective of the study is to determine the most appropriate network architecture that satisfies the need for connectivity to multiple information resources.

A separate Technology Strategy Study is currently under way to recommend a global information technology for the government of New Brunswick. The present study details one aspect of the Technology Strategy Study by identifying a specific networking architecture.

1.2 PURPOSE AND SCOPE OF DOCUMENT

The present report summarizes the networking needs of the departments and their major trends, as obtained from interviews with representatives of a number of departments. The report then presents some network strategies that could potentially be used to implement the data network of the New Brunswick government.

The report identifies areas of further investigation and presents a proposal for the study of these strategies in order to determine the network architecture best suited to the needs of the government.

1.3 OUTLINE OF DOCUMENT

Chapter 2 outlines the trends of the information industry as they relate to networking requirements. This is a brief summary of the relevant aspects of the models developped in the state-of-the-art report of DMR's syndicated study on the integration of data, text, voice and image.

Chapter 3 presents the current information environment of the government. It identifies the required connectivity and the geographical distribution of the access points. It also presents some of the networking costs as an indication of the potential cost inefficiency that results from independent overlapping networks.

Chapter 4 deals with the need for protocol conversion and terminal emulation as a necessary step towards ensuring cross-vendor connectivity.

Chapter 5 presents three network architectures that could potentially be used to implement the required connectivity. These architectures are based on a Sperry backbone, an IBM backbone, and a vendor independent backbone or open network architecture. As a reference, a cost-optimized configuration is indicated whereby the existing networks remain parallel and independent but share the cost of transmission lines through multiplexing whenever possible.

Chapter 6 outlines the proposal to conduct the assessment of the three architectures and the multiplexed configuration from the point of view of functionality, performance, management and economics.

1.4 TERMINOLOGY

In this report the following terminology is used:

NBNA refers to the Network Architecture of the NB government at a conceptual level,

NBNet refers to the physical network of the NB government, i.e. the embodiement of the NBNA.

2. INFORMATION SYSTEMS REQUIREMENTS

2.1 FUNCTIONAL REQUIREMENTS

Functionnally, the objective of information systems is the efficient handling (creation, storage, exchange and processing) of **compound documents** in a **shared space.**

2.1.1 Compound Document

A compound document is a document that contains information under multiple forms. These forms are either data, text, voice or image, as well as any combination of the same.

2.1.2 Shared Space

The shared space refers to the availability of the information (or compound document) to multiple information workers for their joint handling of the information. This joint handling can be simultaneous or time-sequential. It can take place at a single location or at geographically dispersed locations. It can also take place within a single homogeneous information system or else across the boundaries (or interfaces) of dissimilar information systems, provided appropriate converters (or gateways) are used to ensure compatibility.

The exchange of information occurs at one of four levels:

- the **personal** level where the information is generated and re-used solely by a single individual,
- the **workgroup** level where the information is exchanged between people in close working relationship, but not necessarily physically colocated. The information is of interest only for the individuals who constitute the workgroup,
- the **organizational** level where the information is relevant to the organization as a whole, and
- the **external** level where the information is exchanged with the public, with other organizations, with public databases and so on.

2.2 SYSTEMS REQUIREMENTS

The above functional requirements translate into systems requirements of **universal access** and **bandwidth on demand**.

2.2.1 Universal Access

The universal access refers to the ability of an information worker to access an information resource, either an information processor or an information storage and retrieval system, wherever it is located. The only access limitation is that dictated by security or confidentiality reasons. Connectivity to the workgroup level, the organizational level or the external level as appropriate is required, normally from a single workstation. This is to be understood as ONE workstation giving access to multiple resources (ONE workstation per desk) and NOT as the same workstation being used throughout the organization.

2.2.2 Bandwidth on Demand

The information industry experiences a trend towards compound documents that incorporate multiple forms of information, i.e. data, text, voice and image. These forms are of increasing information complexity. Therefore information systems have increasing bandwidth requirements (i.e processing rate in instructions per second, communication rate in bits per second) and increasing information volume requirements (i.e. bits of storage). As the peak bandwidths and volumes requirements are rather expensives, it is important that the technology in support of information systems be able to offer only the resources needed at any moment in an adaptive fashion in order to optimize the usage of resources and their costs.

3. NETWORK REQUIREMENTS OF THE NEW BRUNSWICK GOVERNMENT

3.1 OVERVIEW

The present remote networking needs of the government of New Brunswick are essentially those of the ISD Sperry network. However a number of departments have limited additional networking needs. Furthermore many departments envision new networking requirements in the near to medium term.

In general the depth of definition of future needs is not uniform among the various departments of the government. Medium-term requirements are not well defined. The present low level of identification of specific needs leads to the desirability of a NBNA that offers maximum **flexibility** to accomodate

- growth in population of access points (for either terminals, printers, processors, etc ...),
- growth in volume of traffic per access point,
- change in pattern of traffic flow (i.e. changing origins and destinations),
- new technologies (e.g. computer-aided design, computer-aided learning, computer-assisted retrieval system, facsimile, etc).

The NBNA also has to offer the following characteristics:

- good performance (e.g. acceptable response time, reliability, availability, low blocking level, etc),
- good management functions, including monitoring, control, billing or cost allocation,
- cost optimization and control.

3.2 TRENDS

The information needs of the departments follow similar trends. These trends are also generally found in other organizations. They are:

- **decentralization** to regional offices of the functions of information capture, delivery, query and - to some extent - processing,
- increase in **file transfer** type of communications between remote processors,
- needs to access **multiple** remote information resource,
- increase in the number of **external** information resources to be accessed,
- desire to use a **single workstation** to access multiple information

resources, and

- growing needs for inter-departmental **electronic mail** facilities.

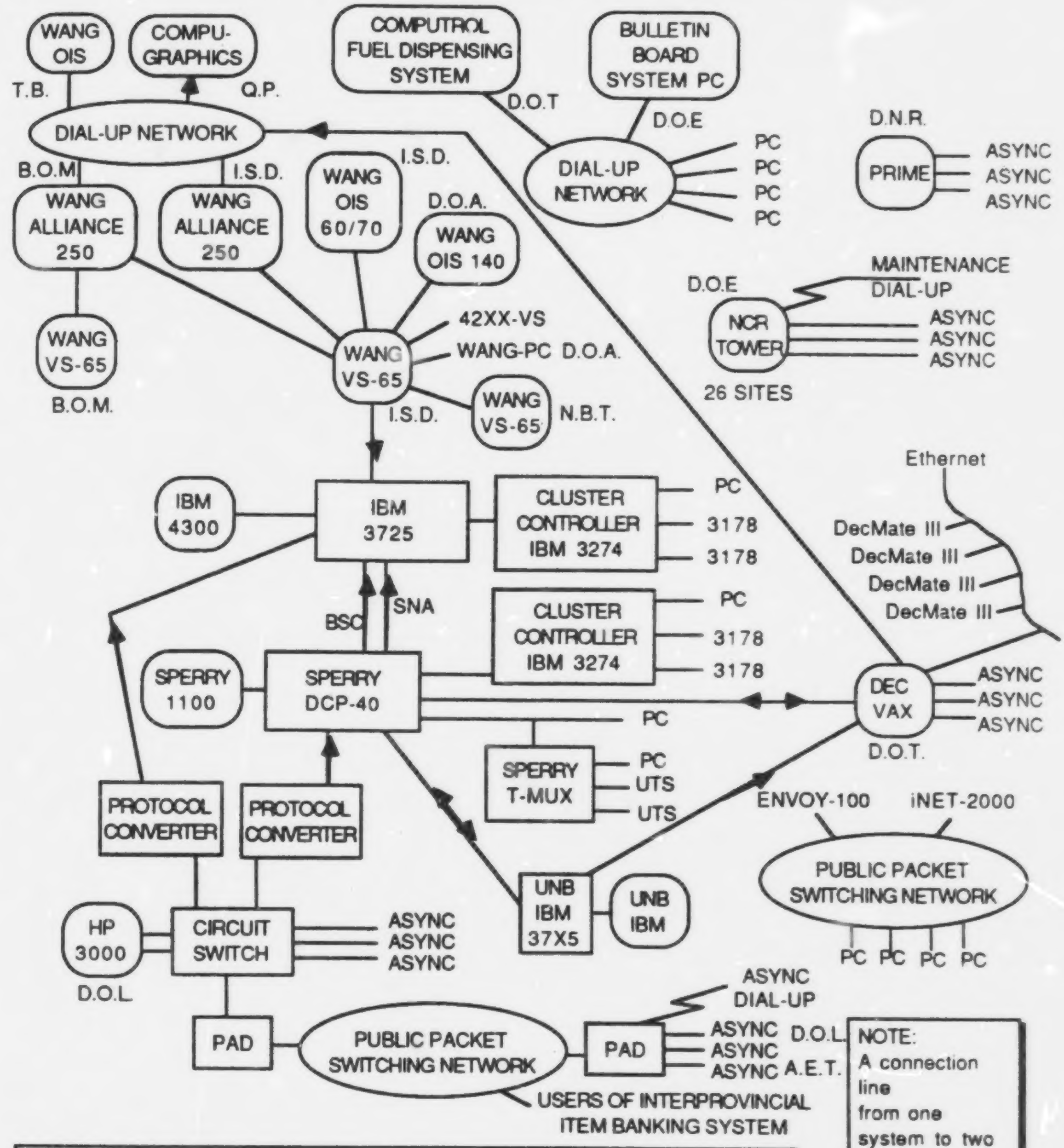
3.3 PRESENT NETWORKS

The present information environment of the New Brunswick government counts processing equipment from seven (7) major suppliers: Sperry, IBM, HP, DEC, NCR, WANG and Prime. Figure 3.1 illustrates the functional implementation of the various networks in use presently by the various departments. The networks are either totally disjointed or at best loosely interconnected.

At the present time, there is a limited need to access a variety of processors using a single terminal. Also the departmental processors are accessed essentially from within the Fredericton area. The only significant geographical distribution of access points is to the ISD Sperry mainframe via the province-wide Sperry network.

Various departments within the New Brunswick government are planning to extend their reach to their regional offices or districts, as well as to multiple processors within ISD or other departments. Table 3.1 indicates the site of many regional offices and the locations from which the various networks will be accessed. This table illustrates the point that individual networks would **overlap** significantly, resulting in a **cost inefficiency**. The magnitude of such an inefficiency can be anticipated based on the current annual line costs of the Sperry network (273 k$/year) and of the other networks (78 k$/year) (see Table 3.2). Note that the costs of the Sperry and IBM front-end processors are not included in the above figures. Indeed depending upon the network architecture that will be retained, there may or may not be a change in the configuration of the front-end processors.

Figure 3.1: Functional Model Of The Present Networks Of The Government Of New Brunswick



WANG OIS
T.B.
COMPU-GRAPHICS
Q.P.
COMPUTROL FUEL DISPENSING SYSTEM
D.O.T
BULLETIN BOARD SYSTEM PC
D.O.E
DIAL-UP NETWORK
B.O.M
I.S.D.
WANG ALLIANCE 250
WANG ALLIANCE 250
WANG OIS 60/70
I.S.D.
D.O.A.
WANG OIS 140
DIAL-UP NETWORK
PC
PC
PC
PC
D.N.R.
PRIME
ASYNC
ASYNC
ASYNC
MAINTENANCE DIAL-UP
D.O.E
NCR TOWER
ASYNC
ASYNC
ASYNC
26 SITES
WANG VS-65
B.O.M.
42XX-VS
WANG-PC D.O.A.
WANG VS-65
I.S.D.
WANG VS-65
N.B.T.
Ethernet
IBM 4300
IBM 3725
CLUSTER CONTROLLER IBM 3274
PC
3178
3178
DecMate III
DecMate III
DecMate III
DecMate III
BSC
SNA
CLUSTER CONTROLLER IBM 3274
PC
3178
3178
SPERRY 1100
SPERRY DCP-40
DEC VAX
ASYNC
ASYNC
ASYNC
D.O.T.
PC
SPERRY T-MUX
PC
UTS
UTS
ENVOY-100
iNET-2000
PROTOCOL CONVERTER
PROTOCOL CONVERTER
PUBLIC PACKET SWITCHING NETWORK
UNB IBM 37X5
UNB IBM
PC
PC
PC
PC
HP 3000
D.O.L.
CIRCUIT SWITCH
ASYNC
ASYNC
ASYNC
ASYNC DIAL-UP
PAD
PUBLIC PACKET SWITCHING NETWORK
PAD
ASYNC
ASYNC
ASYNC
D.O.L.
A.E.T.
USERS OF INTERPROVINCIAL ITEM BANKING SYSTEM

NOTE:
A connection line from one system to two other systems does not necessarily imply that the latter two are interconnected.

A.E.T. : Adv.Educ.Train.
B.O.M. : Board of Management
D.N.R. : Department of Natural Resources
D.O.A. : Department of Agriculture
D.O.E. : Department of Education
D.O.L. : Department of Labour
D.O.T. : Department of Transport
I.S.D.: Information System Division
N.B.T. : NBTel Data
Q.P. : Queen's Printer
T.B. : Translation Bureau

Table 3.1: Geographical Distribution of Current and Near-Future Access Points of Representative Departments to the New Brunswick Government Networks

CITY	SPERRY 1100			IBM 4361	NON SPERRY-1100 AND NON IBM-4361					
	DROPS	TERMINALS	PRINTERS		ADVANCED EDUCATION	EDUCATION	FISHERIES	HEALTH	LABOUR	TRANS-PORTATION
BATHURST	25	37	14		FUTURE	2 9020-4;2 XP		2 PC	(3 D)	PC
BOIESTOWN	1	1	1			-				
BOUCTOUCHE						XP				
CAMPBELLTON	15	20	11		FUTURE	9020-4; XP		2 PC	(4 D)	PC
CARAQUET	8	8	7			XP	PC			
CHATHAM	4	5	2		FUTURE	XP		2 PC		PC
CHIPMAN	1	1	1			-				PC
DALHOUSIE						9020-4; XP				
DORCHESTER	3	3	2		FUTURE	XP				
EDMUNDSTON	17	24	13		NOW	32		2 PC	(3 D)	PC
FREDERICTON	125	458	150	65 D;2 S/36		MINI	PC	2 PC	50 D	PC
GRAND FALLS	6	6	6			XP				
GRAND-SAULT						XP; 32				
HAMPTON	3	6	3		FUTURE	XP; 2 32				
HILLSBOROUGH	1	2	1			XP; MINI				
KEDGWICK	2	2	2			XP				
MINTO	2	2	2			XP				
MIRAMICHI										
MONCTON	33	54	19			-		2 PC	(4 D)	PC
NACKAWIC	1	1	1			XP				
NEGUAC	2	2	1			-				
NEWCASTLE	12	17	9			32			(3 D)	
OROMOCTO	3	5	3			XP				
PERTH-ANDOVER	4	4	3		NOW					PC
PLASTER ROCK	1	1	1			MINI				
RENFORTH	1	3	1		NOW	2 32; MINI				
REXTON						XP				PC
RICHIBOUCTOU	13	18	10							
RIVERGLADE	1	2	1			XP				
RIVERVIEW	1	2	1		FUTURE	XP				
SACKVILLE	1	2	1							
ST-QUENTIN										
SHEDIAC	3	3	3				PC			
SHIPPAGAN	5	5	3							
ST-ANDREWS	1	2	1		1 D				2 D	
ST-GEORGE	2	5	3							
ST-JOHN	22	51	19		1D			2 PC	3 D	
ST-STEPHEN	4	8	6				PC			PC
SUSSEX	6	8	6							PC
TRACADIE	10	10	6							
WELSFORD	1	3	2							
WOODSTOCK	10	15	9						(4 D)	PC
TOTAL LOCAL	125	458	150							
TOTAL REMOTE	227	340	174							
GRAND TOTAL	352	798	324							

Detailled Transportation inventory will be available next week

D: Access Device (Terminal, Printer, PC)
S/36: IBM Miniprocessor
MINI: NCR MINI TOWER
XP: NCR TOWER XP
32: NCR TOWER 32
9020-4: NCR Miniprocessor
NOW: Present Access point. Number of Devices not Known
( ): Future Access Point; Number of Devices Indicated Between Brackets
FUTURE: Future Access Point; Number of Devices not Known

Table 3.2 : Network Costs of the New Brunswick Government

	CHARGES TO USERS	RECOVERED k$/year
SPERRY NETWORK CHARGES	$0.02 per TIP transaction	382
	$3.15 per DEMAND connect h	131
TOTAL AMOUNT RECOVERED		513

SPERRY NETWORK COSTS	ACTUAL EXPENSES	
LINE COSTS	$/month	$/year
LOCAL LINES	4,023	48,276
REMOTE ANALOG LINES	9,345	112,140
REMOTE DIGITAL LINES	9,411	112,932
TOTAL LINE COSTS	22,779	273,348
2 DCP-40s HARDWARE + MAINTENANC	15,000	180,000
PERSONNEL COSTS	4,167	50,000
GRAND-TOTAL	41,946	503,348

IBM NETWORK COSTS	$/month	$/year
IBM 3725 FRONT-END PROCESSOR	2,650	31,800
IBM NCP SOFTWARE	375	4,500
LONG DISTANCE LINES (Note 3)	0	0
GRAND-TOTAL	3,025	36,300

LABOUR NETWORK COSTS	$/month	$/year
DATAPAC TRAFFIC EXPENSES	60	720
DATAPAC ACCESS EXPENSES	1,178	14,136
GRAND-TOTAL	1,238	14,856

TRANSPORTATION	$/month	$/year
FUEL DISPENSING SYSTEM	5,000	60,000

EDUCATION	$/month	$/year
EDUCATION BULLETIN BOARD	300	3,600

OTHER CAPITAL COSTS	$	
LABOUR & ADV.EDUC.TRAIN PADs	12,000	global
SPERRY LOCAL LDS 309A MODEM	630	per circuit end
SPERRY REMOTE GDC 4800 MODEM	1700	per circuit end
SPERRY REMOTE LDM 454 MODEM	1400	per circuit end
SPERRY REMOTE GDC 2020 MODEM	615	per circuit end
LABOUR DEVELCON SWITCH	250	per circuit

	$/year
SPERRY	503,348
IBM	36,300
LABOUR	14,856
TRANSPORTATION	60,000
EDUCATION	3,600
GRAND TOTAL	618,104

Note 1 : Modem maintenance and capitalization expenses to be added to above amounts
Note 2 : Local drops are generally paid directly by the clients
Note 3 : There are no long distance charges on present IBM network

3.4 CONNECTIVITY REQUIREMENTS

Table 3.3 indicates the present and near-term connectivity requirements of various representative departments. The connectivity matrix is not full because few departments need to access more than two or three processors. Actually this minimal requirement might increase because of the expressed need to have electronic mail capabilities across the whole government.

Figure 3.2 summarizes the inter-vendor connectivity requirements. It sketches what vendor environments need to be accessed by users in another vendor environment. The main requirements are for access to the Sperry and IBM hosts from virtually any other vendor environment. This is because of the numerous existing and potential applications that run on these hosts. Also Wang needs to be accessed from a variety of other vendor environments because of the almost ubiquitous requirement to transfer files to the Translation Bureau.

Being dedicated to specialized land-related data-base applications, the Prime computers of Natural Resources are accessed neither from remote locations nor from non-Prime workstations. However considering the importance of land databases in other fields (e.g. transportation road maps, municipal property taxes, ...) it might become necessary to provide access to the database host from the diverse environment of many departments. Whether such a general database would remain on the present Prime computers is beyond the scope of this study.

Table 3.3 : Present and Near-term Connectivity Requirements of Representative Departments of the New Brunswick Government (Part 1 of 2)

		ADV.EDUCATION & TRAINING	BOARD OF MANAGEMENT	COMMERCE & TECHNOLOGY	COMPTROLLER OFFICE	EDUCATION	FISHERIES	HEALTH	INCOME ASSISTANCE	LABOUR
# REGION.OFFICES		9	0		0	42	3	21 (#1)	21	8
# OF PC's						200		200	100	
EXTERNAL USERS								dial-up to and from doctors		
PROCESSOR	OWNER									
SPERRY 1100	ISD	yes	1 T		3 T	a few		200 T	110 D	1D
IBM 4381	ISD	2	7 T	via S/36	5 D	1 T	via S/36	9 D	2 D	1 D
IBM S/36	COMMERCE			yes						
IBM S/36	FISHERIES						yes			
HP3000	LABOUR	35 T						5 D (#3)		50 D
NCR (CENTRAL)	EDUCATION					future				
NCR TOWER	EDUC.DISTRICTS					30 to 40 T				
DEC MICRO-VAX	TRANSPORT									
FUEL DISP.SYSTEM	TRANSPORT									
TRAFFIC MONITOR.5	TRANSPORT									
PRIME 50	NATURAL RESOURC									
WANG ALLIANCE 250	BOARD.MANAGMNT		60 D							
WANG VS 65	BOARD.MANAGMNT		40 D							
WANG ALLIANCE 250	ISD									
WANG VS 65	ISD		yes					dial-up		dial-up
WANG OIS 60	ISD									
WANG OIS 70	ISD									
WANG OIS 140	SUPPLY & SERVICES									
WANG	TRANSLAT.BUREAU		yes					dial-up		direct
NCR	WORK.COMP.BOARD									tape
COMPUGRAPHICS	QUEEN'S PRINTER		yes			yes				
IBM	U.N.B.									dial-up
WORD PROCESSOR		HP Desk	Wang Word Processor	Displaywrite Displaywrite 36	Micom	Displaywrite 36 Q-Text	Displaywrite	departmental system under consideration Envoy 100	Sperry Link	HP Desk
ELECTRONIC MAIL			Wang Office						Sperry Link	Envoy-100 HP Desk
DATAPAC	TELECOM CANADA	remote access to HP 3000	iNet 2000			iNet-2000 for Bulletin Board System		Envoy 100		remote access to HP 3000 + ENVOY 100

NOTES:

# 1: after regrouping of Mental Offices, Public Health Offices and Community Social Services Offices into unique building per city.

# 2: including HRIS development terminals

# 3: no longer required when HRIS is fully operational

D : Device (Terminal, PC, Printer)
T : Terminal
YES : connectivity requirement exists

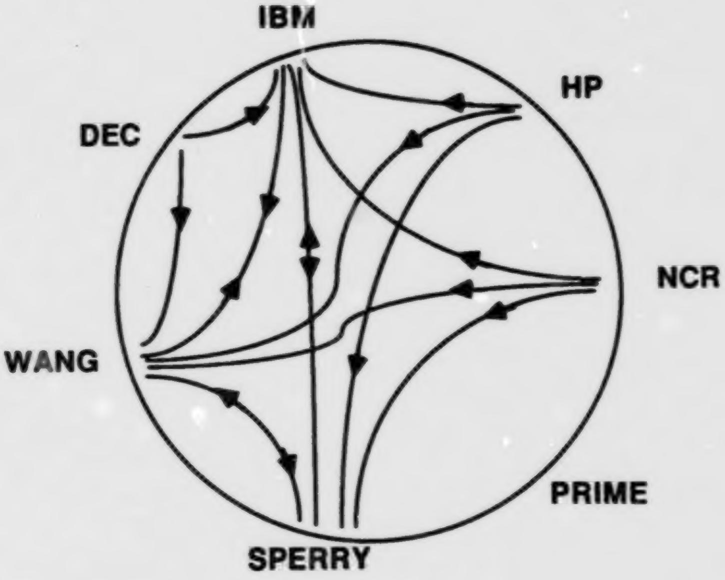
Table 3.3 : Present and Near-term Connectivity Requirements of Representative Departments of the New Brunswick Government (Part 2 of 2)

		NATURAL RESOURCES	SUPPLY AND SERVICES	TRANSPORTATION
# REGION.OFFICES		5+22 offices		11 +33 garages
# OF PC's		60		
EXTERNAL USERS		10 private licensees, mobile rangers	NBTel Data to Wang VS 65	Municipal Affairs, RCMP, NBHP, National Motor Vehicule System
PROCESSOR	OWNER			
SPERRY 1100	ISD	4 D	yes	+100term +via MICRO-VAX
IBM 4381	ISD	2 D	18 D (#2)	5 D
IBM S/36	COMMERCE			
IBM S/36	FISHERIES			
HP3000	LABOUR			1 D
NCR (CENTRAL)	EDUCATION			
NCR TOWER	EDUC.DISTRICTS			
DEC MICRO-VAX	TRANSPORT			yes
FUEL DISP.SYSTEM	TRANSPORT			24 to 120 PC
TRAFFIC MONITOR.S	TRANSPORT			
PRIME 50	NATURAL RESOURC	yes		
WANG ALLIANCE 250	BOARD.MANAGMNT	yes		
WANG VS 65	BOARD.MANAGMNT	5 units		
WANG ALLIANCE 250	ISD		22 D	
WANG VS 65	ISD		11 D	
WANG OIS 60	ISD		3 D	
WANG OIS 70	ISD		6 D	
WANG OIS 140	SUPPLY & SERVICES		12 D	
WANG	TRANSLAT.BUREAU		dial-up	
NCR	WORK.COMP.BOARD			
COMPUGRAPHICS	QUEEN'S PRINTER		yes	yes
IBM	U.N.B.			via MICRO-VAX
WORD PROCESSOR				All-in-One 15 DecMate III
ELECTRONIC MAIL				Sperry MMS1100
DATAPAC	TELECOM CANADA			

NOTES:
1: after regrouping of Mental Offices, Public Health Offices and Community Social Services Offices into unique building per city.
2: including HRIS development terminals
3: no longer required when HRIS is fully operational

D : Device (Terminal, PC, Printer)
T : Terminal
YES : connectivity requirement exists

Figure 3.2 Main Connectivity Circle


IBM
HP
DEC
NCR
WANG
PRIME
SPERRY

4. FUNCTIONAL CONNECTIVITY REQUIREMENTS

The requirement to access different hosts from a single workstation (i.e. universal access) has two implications:

- the network must be able to switch the connection to the appropriate host under the user's control, and
- independently of the switching function, protocol conversion or emulation must be provided to enable a session between the host and a foreign terminal.

This chapter addresses the latter point while the next chapter addresses the former point. Access from a single workstation is to be understood as ONE workstation giving access to multiple resources (ONE workstation per desk) and NOT as the same workstation being used throughout the whole of the government.

4.1 TERMINAL-TO-HOST SESSION

The Sperry "3270 BSC Real Terminal Handler" lets IBM terminals attached to a Sperry DCP front-end processor establish a session with the Sperry host. Conversely the "3270 BSC Inverted Terminal Handler" lets Sperry terminals establish a session with a IBM host. Jointly these terminal handlers let IBM terminals access a IBM host via a DCP.

The IBM terminal emulation on Sperry terminals (Inverted Terminal Handler) is not transparent on two accounts. Two keys must be pressed on a Sperry terminal instead of the single 3270 "Enter" key. This is merely an inconvenience for occasional employee who are not familiar with this emulation. The second emulation difficulty is a functional limitation because Sperry terminals do not let the cursor be positionned in a protected field. For some IBM applications, positionning the cursor in a protected field is a means of requesting "Help" information for that field and of entering a predefined value into the adjacent input field. This second difficulty is encountered with the McCormick & Dodge Millenium application.

The Sperry terminal emulation on IBM terminals (Real Terminal Handler) can not reproduce the full feature set of Sperry terminals. Unexpected results may occur when a Sperry application, taking advantage of the specificity of the native terminals, is accessed from a IBM terminal.

The Sperry SNA/UTS Gateway Feature lets Sperry terminals establish a session with a IBM SNA host. Also the Sperry SNA/3270 Gateway Feature lets IBM 3270 SDLC-type terminals access both a Sperry and a IBM SNA host.

Terminal emulation for asynchronous ASCII workstations and protocol conversion for asynchronous ASCII terminals have reached an advanced level of development. Conversion and emulation for many host protocols are now available. For example the department of Labour uses HP terminals with a JBM protocol converter to access the Sperry host and with a Perle protocol converter to access the IBM host. Also the department of Health uses a single PC to access the Sperry host with a STEP emulation card, the IBM host with the Entry Level emulation card and the HP with the 2622 emulation software. Wang emulation board and software are also used by ISD to access the Wang VS-65 from a Wang PC. Other departments, also use emulation boards and software with PCs to access the Sperry host.

IBM

Most computer vendors have developped 3270 emulation software that allow their processors to attach to an IBM front-end processor as a 3270-type cluster controller. Then their proprietary terminals can log-on to the IBM host as 3270-type terminals.

In the NCR Tower environment, terminal log-on to a remote Tower can be done via the Unix to Unix Communication Program (UUCP) over a X.25 link or asynchronously in TTY mode using the Multilink software.

4.2 FILE TRANSFER

Software products exist that implement file transfer between a IBM host and a PC (e.g. PC-Link by McCormick and Dodge). Similarly in the Sperry world, the Intercom 500C/600C software package can be used for file transfer.

Most computer vendors have developped 2780/3780 emulation software that allow their processors to attach to an IBM or a Sperry front-end processor as a 2780/3780-type of RJE station. Then file transfer from the IBM host to their proprietary devices can take place.

Sperry has IBM BSC 2780/3780 Real and Inverted Terminal Handlers that allow RJE type of file transfer between respectively a Sperry host and a IBM BSC 2780/3780-type of RJE station on the one hand, and between a IBM host and a Sperry type of RJE station. Also the Sperry SNA/3770 Gateway Feature allows file transfer from a SNA host and a Sperry host to a 3770 station.

5. POTENTIAL NETWORK ARCHITECTURES

This chapter describes the four main options that must be examined to arrive at the definition of the New Brunswick Network Architecture (NBNA). These options include three network architectures (NA) and one approach for cost-optimization only . The latter approach shares lines between independent networks through multiplexing.

5.1 SPERRY BACKBONE NETWORK ARCHITECTURE

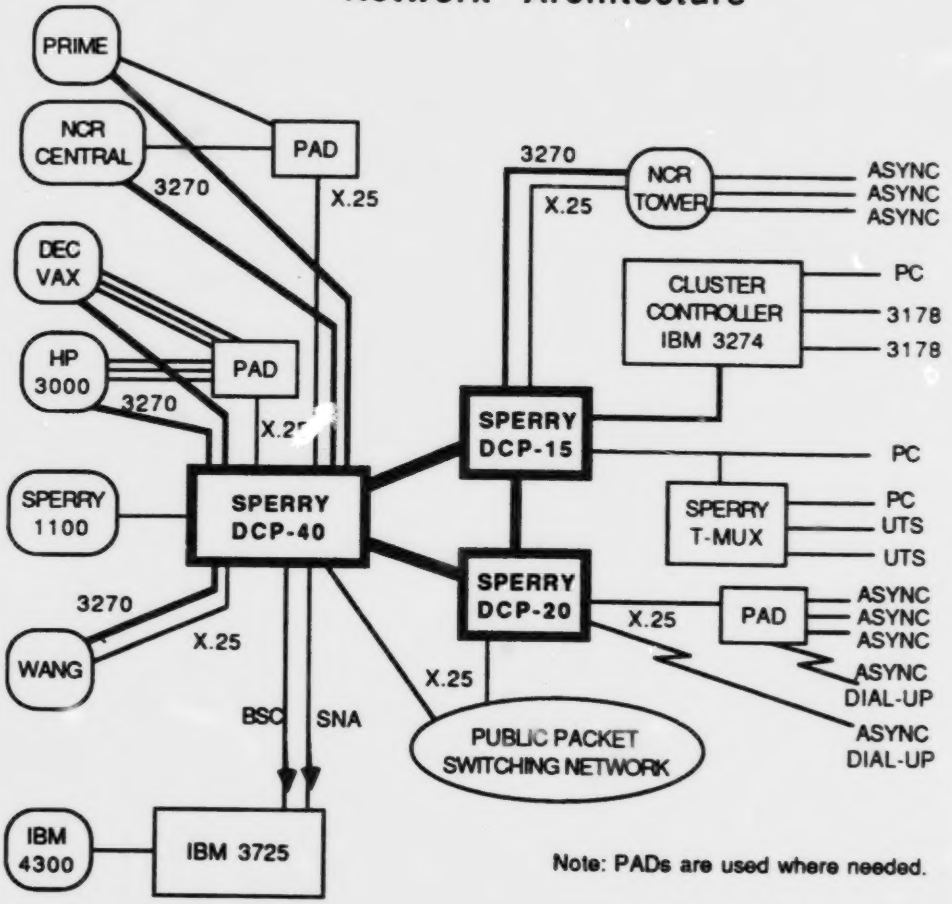
Because of the installed based of Sperry terminals, a Sperry backbone NA is to be examined. Sperry offers remote concentrators (DCP-20, DCP-15, DCP-10A) that have some level of switching capability (see Figure 5.1). The characteristics of this NA are:

- the ability to support 3274-type IBM cluster controllers using the "3270 BSC Real Terminal Handler", allowing IBM terminals to access the Sperry mainframe,
- the ability to allow Sperry terminals to access a IBM mainframe using the "3270 BSC Inverted Terminal Handler",
- the ability to allow IBM terminals to access a IBM mainframe via the joint use of the above real and inverted terminal handlers in the DCP,
- the ability to allow Sperry terminals to access a IBM SNA host via the Sperry SNA/UTS Gateway Feature,
- the ability to let IBM 3270-SDLC-type terminals to access both a Sperry and a IBM SNA host via the Sperry SNA/3270 Gateway Feature,
- the ability to switch X.25 circuits in and out of a DCP network,
- the ability to support other vendors mainframe via the "3270 BSC Inverted Terminal Handler", allowing their terminals to access the IBM and the Sperry mainframe.

The validation of the Sperry backbone NA requires that the following points, among others, be clarified:

- the performance level of the Sperry terminal handlers and SNA Gateway, in particular their impact on response time,
- the meshed networking feasibility of DCPs for alternate routing,
- the host-independance of circuit switching by the DCPs for network availability,
- the X.25 switching at the logical channel level for flexibility and universal access,
- the performance of the network, in particular the response time for applications that require echoplexing (i.e. character echoing by the host),

Figure 5.1 : Sperry-based Tentative Network Architecture


PRIME
NCR CENTRAL
PAD
3270
X.25
DEC VAX
HP 3000
PAD
3270
X.25
SPERRY 1100
SPERRY DCP-40
3270
WANG
X.25
BSC
SNA
IBM 4300
IBM 3725
3270
X.25
NCR TOWER
ASYNC
ASYNC
ASYNC
CLUSTER CONTROLLER IBM 3274
PC
3178
3178
SPERRY DCP-15
PC
SPERRY T-MUX
PC
UTS
UTS
SPERRY DCP-20
X.25
PAD
ASYNC
ASYNC
ASYNC
ASYNC DIAL-UP
ASYNC DIAL-UP
X.25
PUBLIC PACKET SWITCHING NETWORK
Note: PADs are used where needed.

- the ability of the DCPs to support all required foreign processors that emulate the IBM 3270 BSC, 3270 SNA, 2780/3780 protocols in such a way that foreign users can log-on to either the Sperry or the IBM mainframes,
- the management, monitoring and control level of the remote network component.

5.2 IBM BACKBONE NETWORK ARCHITECTURE

Because of the de-facto standard associated with IBM technology, a IBM backbone NA is to be examined. IBM offers front-end processors (3725), remote concentrators (3720, 3710) and protocol converters (3708) that have some level of switching capability (see Figure 5.2). In particular,

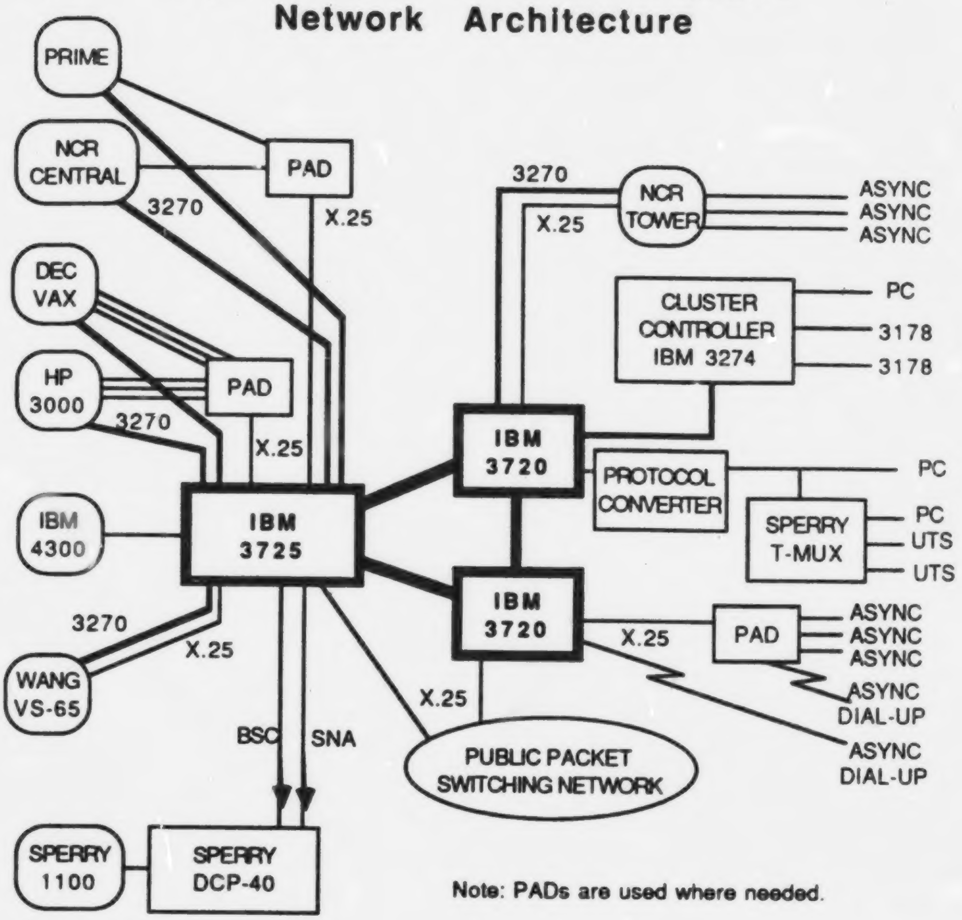
- the 3708 lets asynchronous terminals access either the mainframe or an asynchronous host, and
- the 3725 and 3720 switch X.25 circuits in and out of a IBM network, using the XI software package.

The other vendors participating in the networks environment of the government offer many IBM interfaces for most of their products.

The validation of the IBM backbone NA requires that the following points, among others be clarified:

- the availabitity of protocol converters, allowing Sperry terminals and Sperry T-MUXs to be attached to remote IBM 3720 concentrators or to multipoint SNA or BSC lines,
- the availabilty of software allowing Sperry terminals to access a Sperry mainframe,
- the availability of software allowing actual 3270 devices to log-on to a Sperry mainframe,
- the performance level of the above protocol converters and software, in particular their impact on response time,
- the meshed networking feasibility of 3720s for alternate routing,
- the host-independance of circuit switching by the 3725s/3720s for network availability,
- the X.25 switching at the logical channel level for flexibility and universal access,
- the performance of the network, in particular the response time for applications that require echoplexing (i.e. character echoing by the host),
- the management, monitoring and control level of the remote network component.

Figure 5.2 : IBM-based Tentative Network Architecture


PRIME
NCR CENTRAL
PAD
X.25
3270
DEC VAX
HP 3000
PAD
3270
X.25
IBM 4300
IBM 3725
3270
X.25
WANG VS-65
BSC
SNA
SPERRY 1100
SPERRY DCP-40
3270
X.25
NCR TOWER
ASYNC
ASYNC
ASYNC
CLUSTER CONTROLLER IBM 3274
PC
3178
3178
IBM 3720
PROTOCOL CONVERTER
PC
SPERRY T-MUX
PC
UTS
UTS
IBM 3720
X.25
PAD
ASYNC
ASYNC
ASYNC
ASYNC DIAL-UP
ASYNC DIAL-UP
X.25
PUBLIC PACKET SWITCHING NETWORK

Note: PADs are used where needed.

5.3 OPEN NETWORK ARCHITECTURE

The Open NA is characterized by a number of interconnected switching nodes to which are attached the various information resources, i.e. terminals, printers, hosts, intelligent workstations, etc. Each resource ties into the network through some predefined interface, generally using a de-facto or recognized standard (see Figure 5.3). The switching nodes are interconnected using either a proprietary protocol or a well-established protocol.

This NA lets devices connect directly to their home processor using their native protocol. Alternately, protocol conversion can be used in front of the hosts to support devices that operate with a different protocol. Protocol converters exists for connection between asynchronous ASCII devices and a whole range of host protocols. In particular, this NA lets any asynchronous ASCII device connect to any host of the network, provided that any required protocol converter is used between the host and the closest node. The terminal user issues commands that switch the connection to the desired host (including a remote intelligent workstation or a PC.

The validation of the Open NA requires that the following points, among others be clarified:

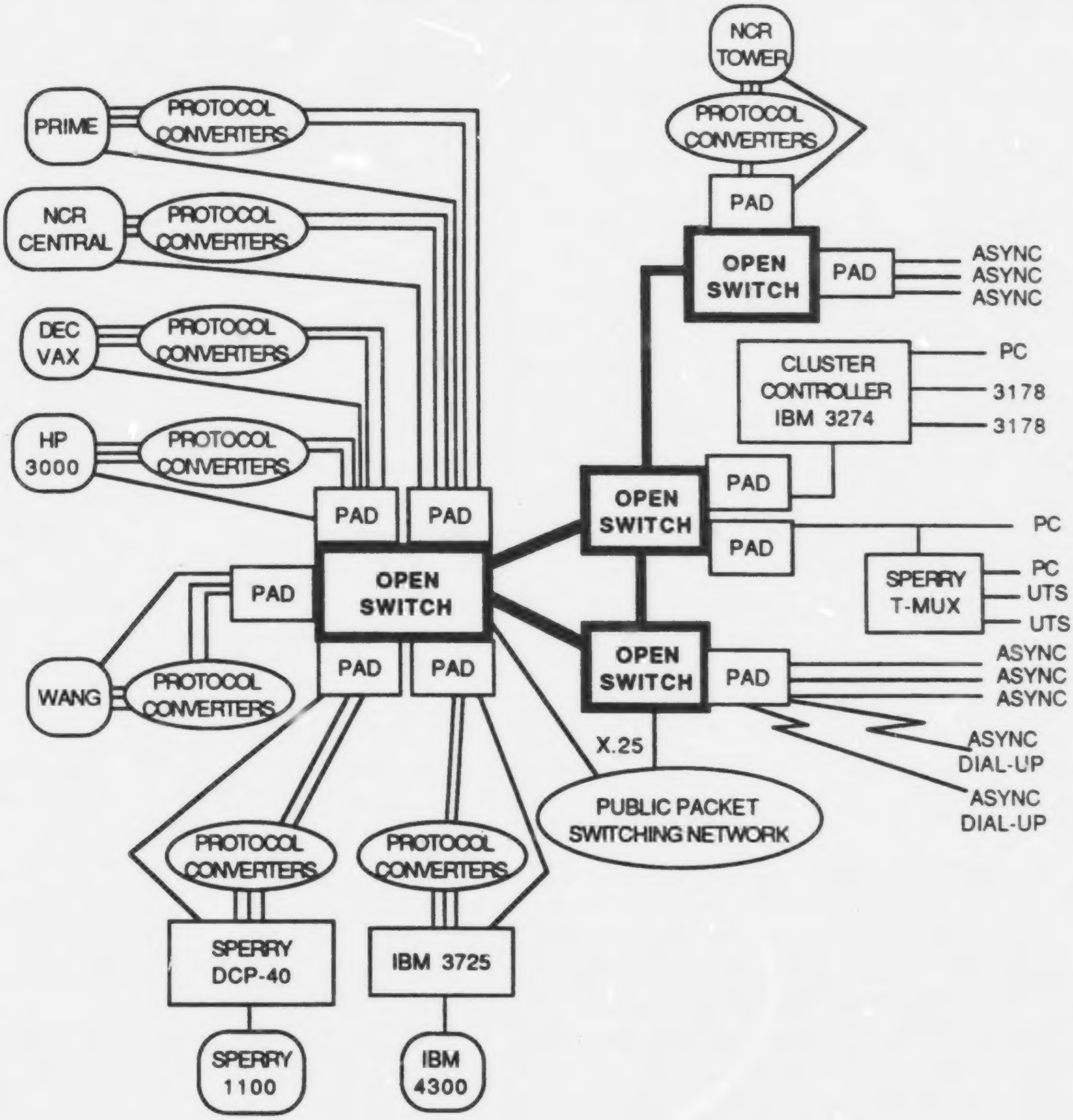
- the availability of UNISCOPE protocol converters allowing the attachment of Sperry devices, Sperry T-MUXs and Sperry DCPs to the switching nodes,
- the performance of the network, in particular the response time for applications that require echoplexing (i.e. character echoing by the host),
- the interworking of the management, monitoring and control of the netwo and of the host network functions.

It must be noted that the public packet switching networks (Datapac, Infoswitch can be part of the implementation of the Open NA. The protocol converters are either provided by the service provider or by the user. In any case, the switching nodes and the lines belong to the public carrier. In a private implementation of t Open NA, the protocol converters and the switches belong to the user while the lines belong to the public carrier.

5.4 COST-OPTIMIZED PARALLEL NETWORKS

This fourth option approaches the networking needs only from a cost-optimization point of view. Essentially the logical interconnection between hosts and their access devices is identical with the present configuration where individual networks are disjointed. However, where possible, multiple communication lines are multiplexed to share the cost of transmission lines on a point to point basis. Management of such a configuration can become difficult when drop and insert capabilities are required. This is the case when multiplexed lines are used in cascade.

Figure 5.3 : Tentative Open Network Architecture


NCR TOWER
PROTOCOL CONVERTERS
PAD
OPEN SWITCH
PAD
ASYNC
ASYNC
ASYNC
PRIME
PROTOCOL CONVERTERS
NCR CENTRAL
PROTOCOL CONVERTERS
DEC VAX
PROTOCOL CONVERTERS
HP 3000
PROTOCOL CONVERTERS
CLUSTER CONTROLLER IBM 3274
PC
3178
3178
PAD
PAD
OPEN SWITCH
PAD
PAD
PC
PAD
OPEN SWITCH
SPERRY T-MUX
PC
UTS
UTS
WANG
PROTOCOL CONVERTERS
PAD
PAD
OPEN SWITCH
PAD
ASYNC
ASYNC
ASYNC
X.25
ASYNC DIAL-UP
ASYNC DIAL-UP
PUBLIC PACKET SWITCHING NETWORK
PROTOCOL CONVERTERS
PROTOCOL CONVERTERS
SPERRY DCP-40
IBM 3725
SPERRY 1100
IBM 4300

6. PROPOSAL FOR ASSESSMENT OF NETWORK ARCHITECTURES

This chapter proposes a work plan for the assessment of the network architectures identified in the previous chapter.

6.1 METHODOLOGY

The proposed methodology of assessment counts four (4) phases.

6.1.1 Phase 1: Functional Feasibility Study.

This first phase identifies all functional components required by each of the architecture and optimization technique outlined in chapter 5. This phase is expected to narrow the choice of architecture by rejecting those that are not functionally satisfactory or can not be implemented. Then this phase identifies the protocol conversion functions outlined in chapter 4 and required to implement the remaining architectures. Specifically the protocol conversions required to access the Sperry, the IBM and the Wang environments from either the IBM, Sperry, DEC, HP, NCR or Wang environments will be addressed.

6.1.2 Phase 2: Network Design

This phase consists of a traffic quantification activity and a network design activity.

a) Traffic Quantification

A questionnaire is prepared and distributed to the departments in order to quantify the geographical distribution of access points and the traffic associated with typical access devices. Based on the returned questionnaires, the agregate inter-node data flow pattern is determined.

b) Network Design

Based upon the quantified traffic needs, networks are designed around the specific equipments of the retained architecture. Nodes or concentrators sites are determined as well as their respective global configurations and sizes.

6.1.3 Phase 3: Quality Assessment

This phase consists of three activities aimed at assessing the quality of the designs from the performance, the cost and the management points of view.

a) Performance Assessment

Based upon the quantified traffic needs, the efficiency of the retained architectures and the desired response time, the bandwidth of the internodal links is determined. Also redundancy of equipment and alternate routing or line back-up are addressed at this point.

b) Cost Assessment

This activity compares the cost of the retained architectures from the point of view of equipment and installation costs, recurrent line and maintenance costs, and manpower costs. The most economical architecture is identified.

For the Open NA and the Parallel Network configuration, representative vendors will be chosen in order to arrive at a representative cost estimate of these technologies.

c) Management Assessment

While network management functions are an essential part of the functional assessment of Phase 1, this activity addresses the organizational issues of a multi-departmental network.

At the end of this activity the preferred network architecture is recommended.

6.1.4 Phase 4: Implementation Plan

The objective of this fourth phase is to outline elements that are essential to the implementation of the recommended network architecture, i.e. the action plan and the allocation of the network costs to the users.

a) Action Plan

This activity outlines the various action items required to turn the conceptual NBNA into a physical and operational network (NBNet). It identifies the areas of responsibilities and the proper schedule of events.

b) Cost Allocation

As a follow-up activity to the cost analysis, a cost allocation scheme is proposed to recover the expenses from the users in an equitable fashion. The scheme is documented in a separate report.

6.2 INFORMATION REQUIRED

The active and timely participation of the departments of the government of New Brunswick is essential to the success of the study. Their contribution will consist in the quantification of their anticipated traffic through the completion of a questionnaire to be issued to them on April 15. Return date for the questionnaire is set on April 24.

Government directives as to the rules for the cost justification of projects will have to be provided .

6.3 EFFORTS AND TIMETABLE

Phase	Activity	Effort ISD day-person	Effort DMR day-person	Begin Date	End Date
1	Functional Feasibility Study	3	10	20.4	1.5
2	Network Design				
a	Traffic Quantification	3	5	13.4	8.5
b	Network Design	2	4	11.5	14.5
3	Quality Assessment				
a	Performance Assessment	2	5	15.5	21.5
b	Cost Assessment	2	6	22.5	1.6
c	Management Assessment	2	3	2.6	5.6
-	Recommendation of NBNA				**5.6**
-	NBNA Report Writing	2	5	8.6	12.6
4	Implementation Plan				
a	Action Plan and Report Writing	2	4	15.6	18.6
b	Cost Allocation and Report	2	4	19.6	24.6
-	Presentations	1	2	?.6	?.6
	Total	21	48	13.4	24.6

The above schedule and efforts assume that no travel to vendor laboratories or their client sites will be required to complete the evaluation of their products.

6.4 COST OF PROPOSED STUDY

At an average fee of $ 725 per diem, DMR fixed fees for the proposed work plan amount to $ 34,800. Accomodations and travel expenses to Fredericton are estimated at $ 7,700. They will be billed at cost. Expenses for pre-authorized additional travel to other locations will also be billed at cost.

6.5 DELIVERABLES

The deliverables of the proposed study consist of a NB Network Architecture Report, two presentations of the findings of the study, an Action Plan Report, and a Cost Allocation Report.

The NB Network Architecture Report presents

- the preferred network architecture,
- a discussion of its relative benefits and disadvantages over the rejected architectures,
- the estimated cost of the NBNA,
- the performance estimates of the NBNA,
- a proposal for cost allocation, and
- management considerations.

The findings of the study will be presented at two seminars: one addressed to the senior management of ISD and the other to the departments of the government of New Brunswick.

The Action Plan Report outlines the action items leading to the implementation of the NBNA, the timing of these items and the responsibilities of the various intervening parties in making happen the New Brunswick Network (NBNet).

The Cost Allocation Report proposes a charge-back mechanism whereby network expenses are allocated to the users as fairly as possible.

Results of the Recent Micro Tender

Presented by
Charlie Chiasson

Results of the Recent Microcomputer Tender

by Charlie Chiasson

Introduction

Before getting into the details of microcomputers to be offered, I want to review for a moment the objectives of the tender, the process and where we are today.

Figure 1

The purpose of the main tender is to make the acquisition of straightforward micro configurations as smooth as possible.

A straightforward configuration is one used for common business software such as spreadsheets, word processors and databases. If the intended application is somewhat more specialized, you are eligible to be considered for exceptions to the tender.

"As smooth as possible" implies several considerations. We hope it means administratively easy, with vendor confidence, with quality assurance and finally within government-wide standards.

The process we go through for each tender cycle consists of the steps you see here.

Initially we gather customer feedback from sources such as ISAC, user groups and personal contact. This is reflected in the new request for tenders prepared and issued jointly by ISD and central purchasing.

Upon receipt of the bids ISD and purchasing draw up shortlists based on equal configurations and price. At this point testing of hardware commences. Within a couple of weeks a committee is struck to make the final selection. Generally we accept volunteers from amongst large user departments, and ask representative groups or customers.

Subsequent to the selection of winners, a Board of Management submission is prepared outlining the contracts to be awarded to vendors. This is further ratified by Cabinet and ultimately our new buyers guide is published. We are currently awaiting these approvals so results presented today are recommendations only.

The major changes in effect for this tender include an emphasis on vendor performance, a broader selection of configurations and an enhanced users guide. Only time will tell if we have accomplished these goals, but for now here are the winning configurations.

THE CENTRAL MICROCOMPUTER TENDER

PURPOSE : **To make the acquisition of straightforward microcomputer configurations as smooth as possible.**

PROCESS : **Customer Feedback**

Request for Tenders

Evaluation of Responses

Selection of Winners

Publication of Offerings

Figure 2-9

The next six overheads are all of the same format so I should take a moment to explain some terms.

We list the key components of a configuration including processor, memory, mass storage and video capability. The processor model and speed are given as this is a direct measure of performance when software utilizes the same basic instruction set. The clock speed is much like the revolutions of an engine. It represents the frequency with which the same basic actions are repeated over and over again. One cycle per second is a hertz and MHZ stands for millions of hertz.

Memory affects performance as it requires more instructions to manipulate things when there is less memory. Likewise for mass storage.

Video capability is obviously of importance as the screen is the prime human interface.

We also list the suggested usage for a configuration in terms of the magnitude of each of the needs. These are subjective on our part and are only meant as guidelines or food for thought.

Finally we list the winning products offered. Generally we have included the lowest price in each model/class combination for "house" brands, "name" brands and IBM. A house brand is locally made and distributed compatible, as compared to a "name" brand which tends to be international, as well as reviewed in leading journals. That is the extent to which more winners were included as we determined that even a 5% price range would double the number of configurations.

Here then are the specifics for each model/class combination.

Desktop - class 1

- cheap, limited capability but hard disk could be added.

Desktop- class 2

- cheap, limited capability, some improvement possible
- class 3 compatibles are cheaper

Desktop - class 3

- reasonably cheap
- reasonable performance
- limited upgradability
- IBM does not make this class

5.1.0 Desktop - Class 1 (Basic IBM PC)

CONFIGURATION

- 8088 @ 4.77 MHZ
- 512K RAM to 640K RAM
- 2 floppies @ 360 KB
- Monochrome Graphics

SUGGESTED USAGE

Need	Low	Med	High
Economy of Price	* *	* *	* *
Processing Power	*		
Future Growth	* * *		

PRODUCTS OFFERED

Price	Computer	Vendor
$1353	Brundata 1-PC (Canera)	Brunswick Data Saint John
$1588	Panasonic FX-600	Computerland Fredericton
$2052	IBM PC	Bayco Bathurst

5.2.0 Desktop - Class 2 (Basic IBM PC/XT)

CONFIGURATION

- 8088@ 4.77 MHZ
- 512K RAM
- 1 Floppy @ 360 KB
- 1 Hard Disk @ 20 MB
- Monochrome Graphics

SUGGESTED USAGE

Need	Low	Med	High
Economy of Price	* *	* *	* *
Processing Power	* *		
Future Growth	* *		

PRODUCTS OFFERED

Price	Computer	Vendor
$2575	IBM PC/XT	Bayco Bathurst

15.3.0 Desktop - Class 3 (Enhanced PC/XT)

CONFIGURATION

- 8088/86 @ 7-8 MHZ
- 640K RAM
- 1 Floppy @ 360 KB
  1 Hard disk @ 20 MB
- Monochrome Graphics

SUGGESTED USAGE

Need	Low	Med	High
Economy of Price	* *	* *	*
Processing Power	* *	* *	
Future Growth	*		

PRODUCTS OFFERED

Price	Computer	Vendor
$1799	ICS Turbo XTE	Interactive Computers Fredericton
$2095	Panasonic PC/XT	Computerland Fredericton

5.4.0 Desktop - Class 4 (PC/XT-286)

CONFIGURATION

- 80286 @ MHZ
- 640K RAM to 1024K RAM
- 1 Floppy @ 360 KB
  1 Floppy @ 1.2 MB
  1 Hard Disk @ 20 MB
- Monochrome Graphics

SUGGESTED USAGE

Need	Low	Med	High
Economy of Price	* *	* *	
Processing Power	* *	* *	
Future Growth	* *	* *	

PRODUCTS OFFERED

Price	Computer	Vendor
$2787	Brundata 4-XT/286	Brunswick Data Saint John
$3245	AES 286 PC	AES Data Saint John
$4535	IBM PC/XT-286 (1 Floppy @ 1.2MB)	Bayco Bathurst

5.5.0 Desktop - Class 5 (PC/AT)

CONFIGURATION

- 80286 @ 8 MHZ
- 640K RAM
- 1 Floppy @ 360 KB
  1 Floppy @ 1.2 MB
  1 Hard disk @ 30 MB
- Monochrome Graphics

SUGGESTED USAGE

Need	Low	Med	High
Economy of Price	* *		
Processing Power	* *	* *	*
Future Growth	* *	* *	*

PRODUCTS OFFERED

Price	Computer	Vendor
$3302	Brundata 5-At	Brunswick Data Saint John
$3999	Tatung	Interactive Computers Fredericton
$7198	IBM PC/AT (1 Floppy, Mono text)	Computerland Fredericton

5.6.0 Desktop - Class 6 (COMPAQ 386)

CONFIGURATION

- 80386 @ 16 MHZ
- 1024 K RAM
- 1 Floppy @ 1.2 MB
  1 Hard disk @ 40 MB
  1 Tape Backup @ 40 MB
- Monochrome Graphics

SUGGESTED USAGE

Need	Low	Med	High
Economy of Price	*		
Processing Power	* *	* *	* *
Future Growth	* *	* *	*

PRODUCTS OFFERED

Price	Computer	Vendor
$7931	COMPAQ 386	Computerland Fredericton

5.7.0 Portables - All Classes

Class	Price	Computer	Vendor
1	$1499	Cordata PPC 400 (8088,512,2FL,CGE)	Interactive Computers Fredericton
2	$2124	Cordata PPC 400 (8088,512,1FL,20HD, CGE)	Interactive Computers Fredericton
3	None		
4	$5606	Compaq Portable II/4 (80286,640,1FL,20HD, Dual)	Datamaster Fredericton
5	$6822	Compaq Portable III (80286, 640,1FL,40HD, Plasma)	Datamaster Fredericton
6	None		

5.8.0 LAP - All Classes

Class	Price	Computer	Vendor
1	$2195	Zenith 171-42 8088,512,2FL(360), Herc.	Bayco Bathurst
1	$2495	Zenith 181-92 8088,512,2FL(720), Herc.	Bayco Bathurst
	$2574	Toshiba T1100 80C86,640,2Fl(720), LCD	Computerland Fredericton
	$2679	IBM PC Convertible 8088,256,2FL(720), LCD	Datamaster Fredericton
	$2750	NEC Multispeed 8086,640,2FL(720), CGA	Interactive Computers Fredericton
2	$4499	Quadram Datavue 80C88,768,1FL, 20HD,CGA	Interactive Computers Fredericton
3	None		
4	$5679	Toshiba 3100 80286,640,1FL, 20HD,Plasma	Computerland Fredericton
5	None		
6	None		

Desktop - class 4

- medium price
- medium capability
- medium future growth

Desktop - class 5

- more expensive
- more processing capability
- future growth good

Desktop - class 6

- expensive
- very powerful
- future growth good

Portables

Class 5 only weighs 20 lbs.

Laps

Variation allowed due to unknown requirements.

Price trends analysis

The average markup for an IBM PC has been 53% over the last 3 contracts.

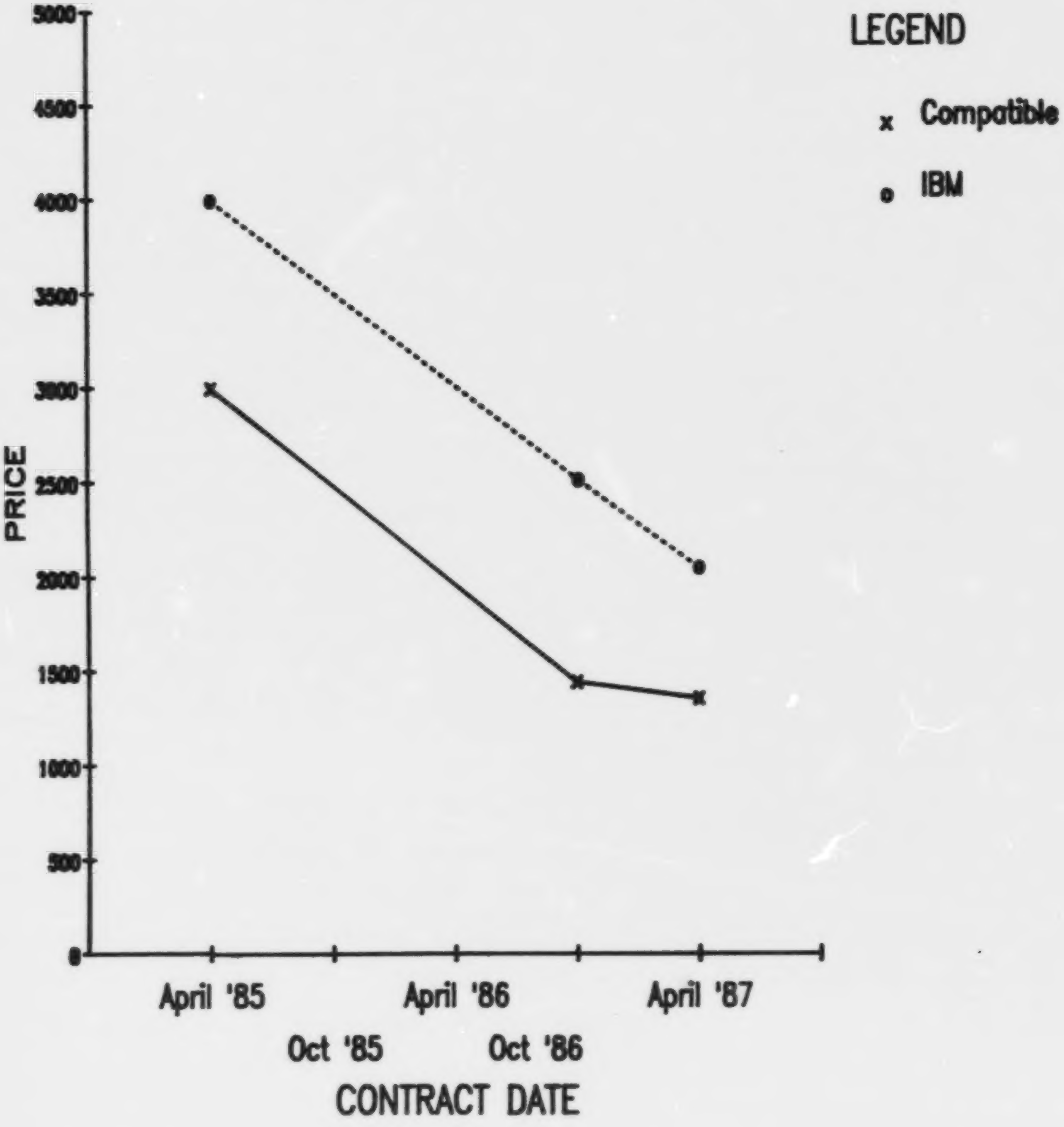
The average markup for an IBM PC/XT has been 77.8% over the last 3 contracts.

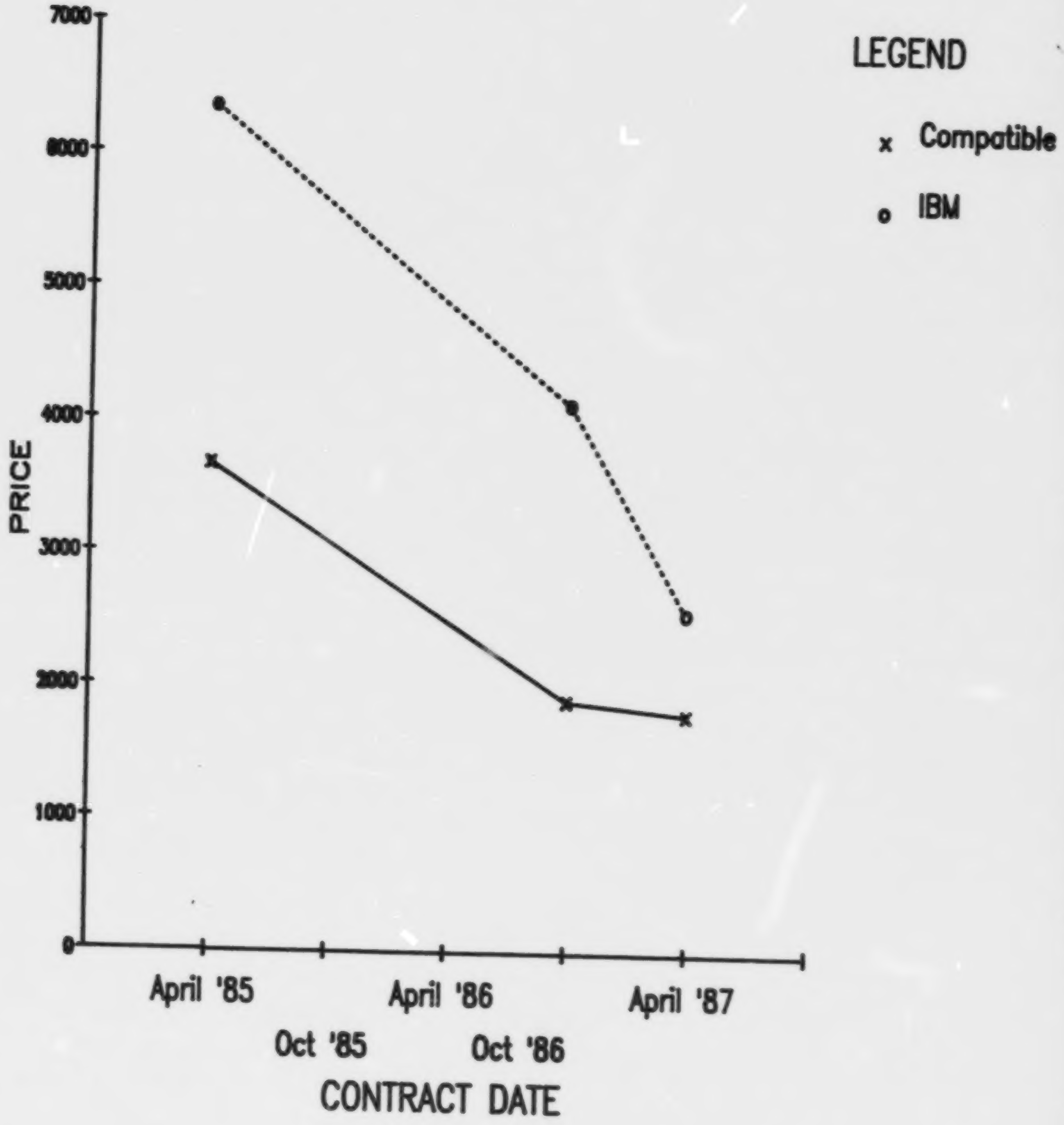
The average markup for an IBM PC/XT has been 98.9% over the last two contracts.

Summary

On $3 million sales, we would have paid 75% or $2.25 million more if we had bought only IBM's. However, we have invested staff time to learn the hardware and manage compatibles.

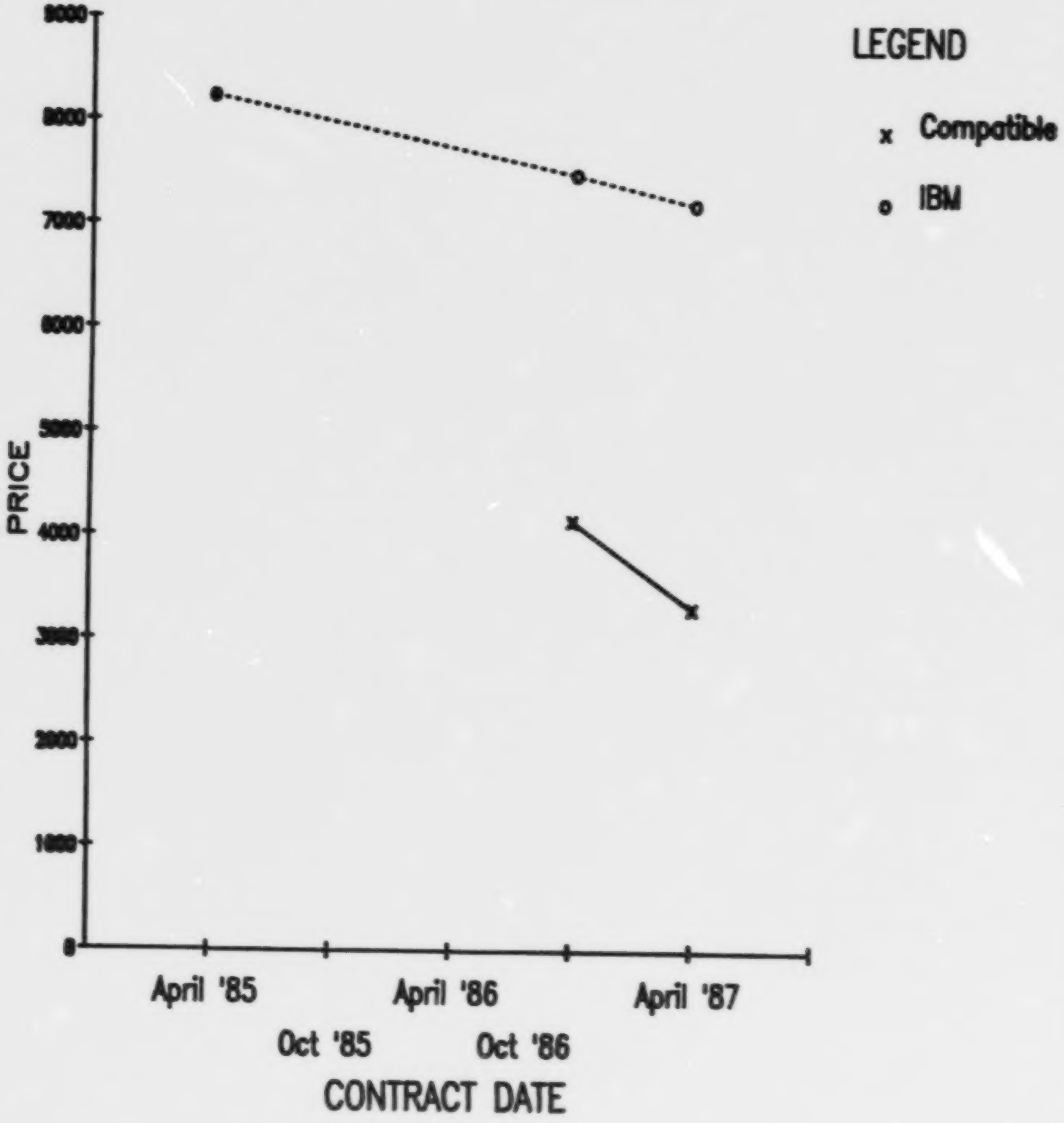
IBM PC
Price Comparison





IBM PC/XT
Price Comparison

IBM PC/AT
Price Comparison



SUMMARY PRICE ANALYSIS

CONFIGURATION	AVERAGE % INCREASE OVER COMPATIBLES
IBM PC	53.0 %
IBM PC/XT	77.0 %
IBM PC/AT	96.9 %

* A 75 % increase on $3 million hardware sales per year is $ 2.25 million

* By buying compatibles we may have saved the N.D. taxpayers $ 2.25 million last year.

IBM Announcements

In light of IBM's recent announcement of their personal system 2, I felt I could not end this presentation without a few comments as to where they fit in and what we intend to do.

This next figure shows our current classification series and IBM's new models. In each case the new IBM's offer more processing power (speed and mass storage) than existing models but nevertheless remain sufficiently close to remain in that class rather than move to the next.

The major architectural changes are a new 32 bit bus (we went from 20 to 24 in going from the XT to the AT), some repackaging (adapters on motherboard) and new monitors. The bus allows larger memories but requires new feature boards and a new O/S to take advantage of it. The O/S is one to two years away and the boards something less. When the O/S arrives it will also run on existing 80286 processors.

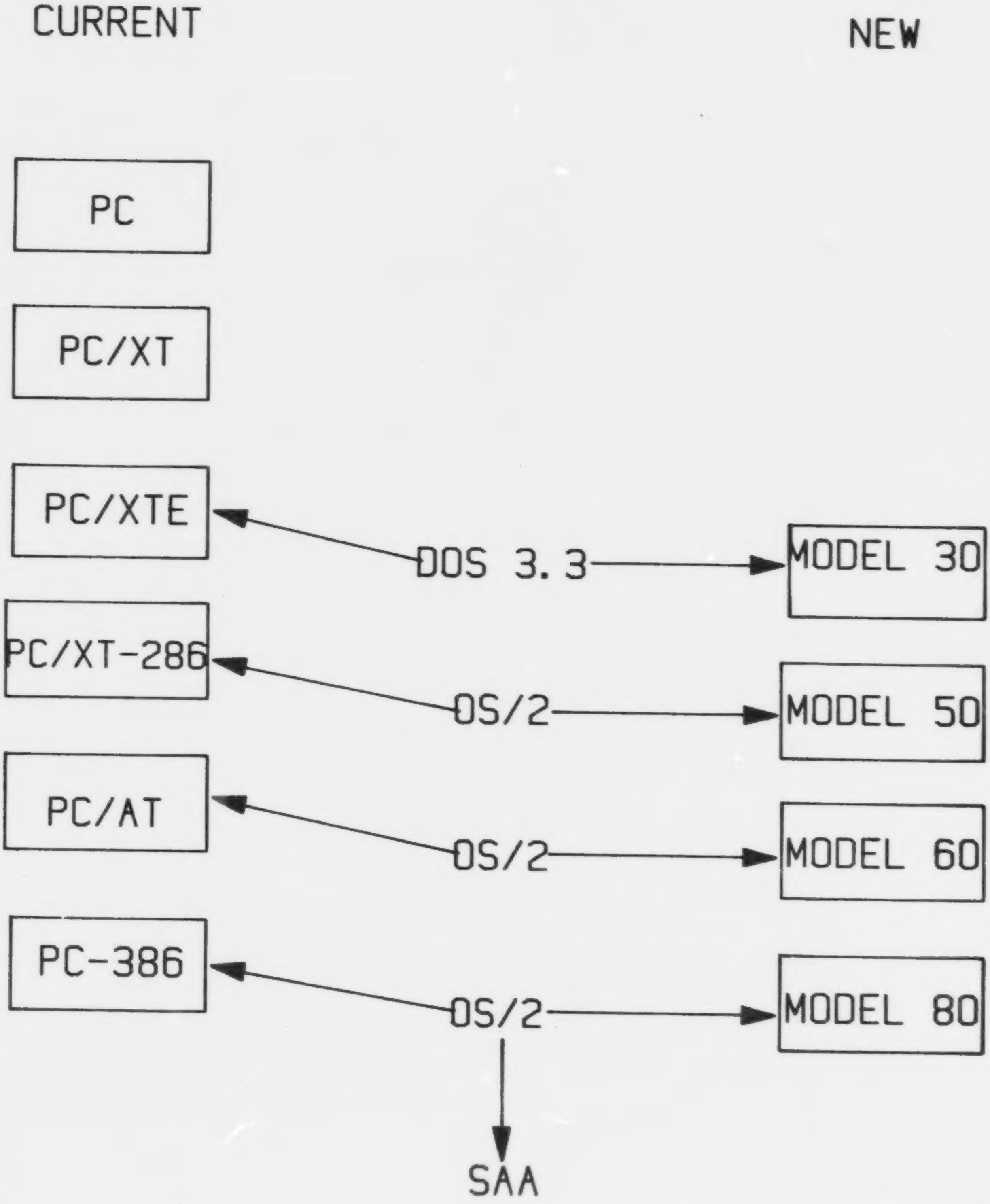
What we really have is an announcement of IBM's intentions in the 80386 world made available today in order to capture the market. OS/2 is a participant in IBM's systems application architecture. This is a collection of application standards that will make applications look the same across IBM hardware. This does not mean portable, just visually similar.

All of this leads me to conclude that:

a) These changes support the next generation.

b) Todays generation has not been abandoned.

c) The old architecture has a few years left yet.


CURRENT
NEW
PC
PC/XT
PC/XTE
DOS 3.3
MODEL 30
PC/XT-286
OS/2
MODEL 50
PC/AT
OS/2
MODEL 60
PC-386
OS/2
MODEL 80
SAA

IBM PERSONAL SYSTEM/2

SUMMARY COMMENTS

* Architectural changes are primarily performance improvements in support of the next generation of micro computing.
ie. Concurrent multi-tasking users
Large memory applications

* Current microcomputer owners have not been abandoned.
ie. DOS 3.3 on XT thru AT and MODEL 30 thru 80
O/S 2 on XT-286 thru AT and MODEL 50 thru 80

* Recommendations to buyers

- Buy according to need for a 1 to 2 year time horizon.

- Buy an 80286 based machine for a 2 to 4 year time horizon.

- Avoid buying an 80386 based machine until the market stabilizes.

HRIS Project Status Report

Presented by
Colin Payne

NB Government Information Systems Client Conference
April 22 & 23, 1987

HRIS Project Status Report

By Colin Payne

For those of you who don't know who I am, I'm currently the Human Resources Information Branch Director with the Board of Management. I have been here at the NB Government for the past six and one half years except for a year's leave of absence spent in England. I joined the Information Systems Division as a senior analyst of the Medicare Project and subsequently worked on the Vital Statistics Project.

After my return from England in the Spring of 1985 I joined the HRIS Project, as the user team leader.

HRIS, the Human Resources Information System is viewed by the Board of Management, and I quote from their annual report, "as a multi-year development of a comprehensive automated system" that is initially focused on the Part 1 regular Civil Service. HRIS is also viewed as an important system that is supporting the government's expressed desire to decentralize the responsibilities for the operational aspects of its activities. It is putting the responsibility for payroll and personnel activity into the hands of the departments. With this decentralization has come the use of the IBM mainframe and its necessary communications network. HRIS has been used to move this technology out of Marysville into each and every department.

I am not the individual to talk to you on the technical aspects of this IBM Communication Network, but I am here to tell you about the HRIS Project and the HRIS Branch. I will also tell you a little about my experiences of establishing the IBM Network and my opinions on the changes that will occur .... or may occur.

Now that this introduction is complete, I would like to give you a view of the branch and project structure. In keeping with what I believe to be the right way to organize a project, HRIS has been and continues to be a mixture of the involved user departments and the Information Systems Division. We currently have in excess of twenty individuals involved directly with both development and, as of April 6, with production.

I'm the Branch Director with the overall responsibility for the development of the HRIS. I moved to the Board Of Management in August of last year to occupy the position - held previously by David Loukes.

Keith Murray is our Project Manager, he has the responsibility to deliver the technical product. He is supported by seven ISD staff, two ISD contract resources, a Co-op student and two on-site resources from Quantum, a technical team of twelve. Representing the Office of the Comptroller are four individuals led by Ralph Clarkson.

NB Government Information Systems Client Conference
April 22 & 23, 1987

HRIS Project Status Report

By Colin Payne

In the HRIS Branch, in addition to myself, are two personnel resources, soon to be augmented by at least two more. Our client support is provided by one secretary and two casual employees.

By no means a small group, but it is important to remember that except for the FIS, the corporate payroll/personnel system is the only government wide system that we have within our organization and as well is a significant project.

As a project we operate with a steering committee and we have established within every department a HRIS coordinator who act as the link between the departments and the project.

Now to deal with some project history.

In pursuit of the goal of developing a comprehensive automated system and with the recognition that an IBM environment was being established for the NB Government, an extensive evaluation of IBM brand software packages was undertaken in 1984-85.

It is outside of my knowledge as to why the package route was selected over an in-house development, although I have my opinions just like anyone else. There could have been several major reasons, obtaining a proven product, the lack of IBM expertise in-house to develop a product et al. In my opinion, one of the important reasons the package route was selected is that it "gets the system off the pot". The arrival of the package forces one to get on with the job of implementing a system as opposed to talking about it.

The package selected was obtained from McCormack and Dodge and has the technical title of "HR:Millennium" Millennium being the environment within which the HR system operates. I have often mused on this Millennium title. By definition it can mean "a thousand years... "a period of great happiness", "a period of human perfection". All of which may or may not prove to be of significance! The selection of this M&D package was influenced by the features available for customizing the product to suit the specific environment that we have here in New Brunswick. These features including the Facts File environment, where the personnel requirements have been developed and the custom source tools have proven to be very necessary.

McCormick and Dodge are, as you are aware, a major software supplier in both Boston and Huntsville, Alabama with a world wide sales and support organization. Their major strength has been a general ledger system but their Human Resource, Accounts Payable and manufacturing systems have provided them with a wide client base.

NB Government Information Systems Client Conference
April 22 & 23, 1987

HRIS Project Status Report

By Colin Payne

However, as their systems flexibility was a positive factor for their use here in NB, their lack of Canadianization and Canadian support has proved to be their biggest shortcoming which has in turn been a significant contribution to our problems during the development cycle.

It should be noted, however, that other major corporations in Canada have also purchased the HR package, they include the Royal Bank, Shell Oil, Toronto Star, C.I.L., Via Rail, General Motors, CSST (Worker's Compensation in Quebec), etc.

It should also be noted that those who have implemented it have had at least as much "fun" as, we have had over the past two years in bringing up this system. The Toronto Star struggled with four successive implementation dates over the period of a year and Via Rail are continuing their struggle with the complexities of the 800-900 programs that make up the core of the package.

I've referred to the long period of development. Much to the surprise of some individuals, the buying of a major software package does not eliminate all of the development cycle. Packages of this complexitity are not installed by adding hot water and stirring to make instant systems. If you actually wish to tailor your business to match the package, it may be possible to implement it in a shorter period of time. CSST in Quebec, did implement a nearly pure, albeit Francophone system. However, even their chairman was hourly paid to suit the simplistic approach of the system.

For us, however, the system has had to be adapted to the environment that we are all part of, the NB Civil Service.

In June of 1985 the package was installed at the University Of New Brunswick computing centre. Our IBM 4381 system was not available until later in 1985 and the installation of the package at Marysville was not made until January 1986. During the summer of 1985 the project team attended a variety of on-site and off-site courses provided by the vendor.

As I joined the project in July 1985, I missed most of this system exposure but some of these courses were video taped, and I can assure you they are not in our local Video King outlet as they are noted for their lack of excitement.

Part of the activity of 1985 was to establish the HRIS objectives as a series of measurable milestones. The first milestone was to provide to all departments some visible proof of the HRIS activities.

NB Government Information Systems Client Conference
April 22 & 23, 1987

HRIS Project Status Report

By Colin Payne

On April 1, 1986, on schedule, we implemented Milestone 1 which is a bi-weekly snapshot of the Genesys payroll system. It was displayed at that time, via a Sperry (Unisys) network, on thirty-nine screens from thirteen data bases. Every two weeks the records for 10,000 employees are converted into approximately 400,000 M&D transactions to create this live but not updateable environment. The purpose of this milestone was to provide a visible product to each of the departments that would be used to gain familiarity with the screens and their field contents.

As an objective this has to date not been as successful as it should have been and will have to be. As a replaceable bi-weekly snapshot, which could not be updated, there was no impetus for departments to use the data in their day to day activity. And not the least of the reasons, our payroll/personnel departments do not have a lot of spare time to play with the system. However, some departments have made use of the Milestone 1 data by using it as a window to the Genesys system and to be able to view pay cheques on an early basis. I still believe the snapshot route was the correct one to follow and our experience with the complexity of the system and our training for the first departments to be implemented have substanciated this view. This system will not be learned from a weeks training. It will be learned by users who use the Milestone 1 data to pre-school themselves to the data now represented by over 100 screens or forty plus data bases.

As I noted, this Milestone 1 information was made available to the department through the existing Unysis network using primarily the SVT 1120 terminals. This experience together with the use of IBM terminals on the project and the recognition that the government had purchased an IBM based package for use on the IBM mainframe led us to review over a number of months the functionality of these Unisys terminals with the HRIS. Suffice to say that there were a number of memos exchanged back and forth between the interested parties.

In the end it was the Director of the HRIS Steering Committee and the support for the costing of the IBM network by the Board of Management that effected a move to the existing IBM terminal/PC network that is beginning to take shape. And it is this environment that we are now working with, a mix of IBM PC-XT's, IBM 3191 terminals and a few compatible Corona PC's.

NB Government Information Systems Client Conference
April 22 & 23, 1987

HRIS Project Status Report

By Colin Payne

The three downtown locations have been configured with IBM 3174 controllers and the Board of Management, the Departments of Finance, Health, Transportation, Income Assistance are all currently operational. Fisheries and Commerce/Technology have had their System 36's upgraded to interact with the mainframe. As soon as the vendor can fill the back orders on emulation packages, the PC based departments will also be operational within the IBM network. The two most important technical features that are enhanced by the use of the IBM terminal/PC are, the functionality of the keys more closely aligns the functions of the package and the substancial use of the on-line documentation, HELP, can be used to its fullest extent. Initially it must be remembered that an expanding use of the function keys for the package will be ongoing with future updates from the vendor.

Throughout 1986, but significantly after the Milestone 1 implementation the project team were engulfed in developing the specifications for and customizing the package to meet our NB Government's requirements.

At an early stage in this cycle it was recognized that the implementation, of a payroll system would be the necessary first step in creating a Human Resources Information System. Although personnel features can be developed separately from a payroll system, in excess of 60% of the transactions used to maintain a payroll system have an impact on the personnel system. This was not an approach that was universally accepted as there were others who believed that a personnel system should be developed, independently of a payroll system and that it could be done in a shorter time frame. However the avoidance of duplicity in transaction input prevailed.

With Milestone 2 established as the implementation of an on-line system, with an emphasis on replacing Genesys, the team was charged with developing the functional specifications ... eight volumes in all. The HRIS as now implemented provides, in addition to bi-weekly cheques, position control in support of the Civil Service Act, interfaces with FIS, basic data for the Women's Directorate and Official Languages Branch and Job Classification and Salary Tables which are used to create pay manuals.

During the last year, in addition to the eight volumes of Functional specifications we have created a twelve volume operations manual, a single volume on security, and a user manual.

So much for the paperless society!

NB Government Information Systems Client Conference
April 22 & 23, 1987

HRIS Project Status Report

By Colin Payne

This user manual will have to cover the infinite number of events that can happen, detail the thirty-three updateable screens, the seventy viewing screens and the reports, currently listing 150 available from the system. This manual will be the first Payroll/ Personnel manual that has existed here in the NB Government. Not only will it have to show how to effect changes to an on-line system it will also define why the process is performed. It reflects the complexity of the Civil Service with its positions, appointments, exclusions, bargaining units, thirty types of special earnings, 37 types of deductions, etc.

The HRIS by its very nature of being a decentralized on-line system has moved many of the functions that were previously performed at the Central Agency level out to the departments. HRIS and its documentation has to ensure that all departments perform the same functions in the same manner. With HRIS we will not be able to do the same process in a variety of ways.

Now that we are in production for two departments we are gaining the experience necessary to implement the balance of the Government. The training program for all departments will prove to be longer than we had previously anticipated. As I've noted, an emphasis on the use of the Milestone 1 data will be part of that training. This data now is "updateable", that is all of the screens used in production are also usable by all other departments. During the next few weeks we will be delivering the first of the three user volumes to all departments in order that they can make more use of the system.

The summer of 1987 will be dedicated to this training and to the assessment, implementation and testing of the new HR release from the vendor.

We have to evolve the methods to be used and to access information by assessing a variety of tools available with the system. We have Benefits statements, Statistics Canada requirements, T4 outputs, Record of Employment output to develop. Our priority items will include the handling of Retroactive Pay, enhanced earnings and the Casual payroll.

The Board of Management will continue with its active involvement with the HRIS in order that this system meets its far sighted objectives.

The HRIS has presented all of us with a significant challenge.

NB Government Information Systems Client Conference
April 22 & 23, 1987

HRIS Project Status Report

By Colin Payne

The challenge of implementing a major software package in a new technical environment with a need for all departments to be actively involved. The Office of the Comptroller, the Board of Management and ISD have, without question, had some difficulties at times finding their roles within this scenario. However it has worked and it will continue to work with committment to the system. The first departments, Fisheries, Income Assistance and Transportation have exercised a great deal of patience with our development process. The Department of Health has provided us with their experiences and support.

Eventually, HRIS will require all departments eventually to be actively involved ... especially if we want to continue to pay our employees.

The implementation of the HRIS to date with its emphasis on payroll will prove to be the easy part of this development. The definition for the Personnel side with 26 departments each having a point of view will provide us with a new set of problems.

In conclusion, communications for HRIS is far more than twisted pairs, controllers, synchronous devices, etc. For the Branch and the project its the need to communicate within the team and the need to communicate with all departments. Technically, the decentralization of input to the HRIS will, in the not so distant future, require that we have available communications from regional districts. The needs of Transportation will be the driving force for this network.

Further information on HRIS can be obtained from the HRIS Branch.

Technology Strategy for The N.B. Government

Presented by
Jerrie Fowler

A Technology Strategy for the New Brunswick Government

Project Overview

Information Systems Conference

April 23, 1987

Technology Strategy Project

The Agenda ...

- **Current issues**
- **Project overview**
- **Questions**

Technology Issues ...

- Technology is going wild. No business will be left unchanged by the current technological developments.
- Computers will continue to drop in cost and change their nature.
- Most executives are not obtaining the information most valuable to them from today's systems.
- The methods of the 1970's are inappropriate for the 1990's.
- The new methods require user-driven computing where possible.
- The spread of micros and user-created data must be planned and coordinated.

Technology Issues (cont.)

- A vital job of managers today is the building of a computerized corporation. The foundation of this is a stable representation of the data that the corporation uses.
- An integrated corporate infastructure needs to be designed and built.
- Office-of-the-future technology can substantially improve productivity, but must be integrated with dp.
- Distributed processing is spreading rapidly, but can be a formula for chaos if not planned and coordinated.
- Telecommunications networks are a key corporate resource.

Technology Strategy

☞ **Any questions?**

Technology Issues (cont.)

- **Because of the rapid rate of change in technology, strategic planning is needed. This should create an integrated view of future resources and a plan for getting from here to there in stages.**

The Technology Push...

Some Examples:

- Todays PCs cost less than computer terminals five years back.
- An Email message costs less than regular post and receives same day acknowledgment.
- Common carriers are now offering high speed digital communication trunks capable of carrying 24 times the communication traffic compared to previous analog phone circuits.
- Optical disk technology is now providing high volume, cost effective, durable storage, filling the gap between magnetic disks and microform.
- Artificial intelligence in the form of expert systems is now providing advance decision support in the office.

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BUSINESS PERSPECTIVE

Three areas of impact to consider -

Strategic Management

Systems Management

Individual Effectiveness

Bottomline orientation -

- Cost reduction opportunities
- Value-added benefits (transferable to revenues?)
- Hard and soft costs/benefits
- Risk assessment

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TECHNOLOGY PUSH

Potential impacts of not keeping pace -

Strategic Management

- missed business opportunities
- eroded competitive position
- unnecessary expenses and overheads
- slowed responsiveness
- limited service levels

Systems Management

- redundant systems
- limited operational flexibility
- limited growth options
- increased incompatibilities
- uncoordinated user solutions

Individual Effectiveness

- time spent on inappropriate activities
- restricted access to information
- restricted communication
- limited to traditional approaches
- clutter and interruptions

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Why Are We Here?

"At some time in the life of virtually every organization, its ability to succeed in spite of itself runs out."

R. H. Brien

Advantages of an Unchanged Environment ...

"One of the advantages of being disorderly is that one is constantly making exciting discoveries."

A. A. Milne

"The only nice thing about being imperfect is the joy it brings to others."

Doug Larsen

Technology Strategy Project

Overview

- Initiated as a result of IS Steering Committee recommendation
- Contract signed with DMR Group in March - work has already begun
- Preliminary recommendations due in June - implementation scenarios
- Final results in September:
  - technology strategy
  - priority action plan
- Project team will be composed of DMR and NB Government resources
- Executive Sponsors:
  - F. Arsenault
  - P. Blanchard
  - W. Morrissey

Technology Strategy

Scope and Objectives

- **Must address both immediate and long-term (3-5 year) objectives related to Information Systems**

- **Must support:**
    - **corporate/central agency needs**
    - **information sharing among departments/agencies and the public**

- **Must consider current environment commitments and constaints:**
    - **hardware**
    - **organization (staffing levels)**

- **Must address:**
    - **global data architecture**
    - **applications architecture**
    - **telecommunications**
    - **hardware**
    - **software**

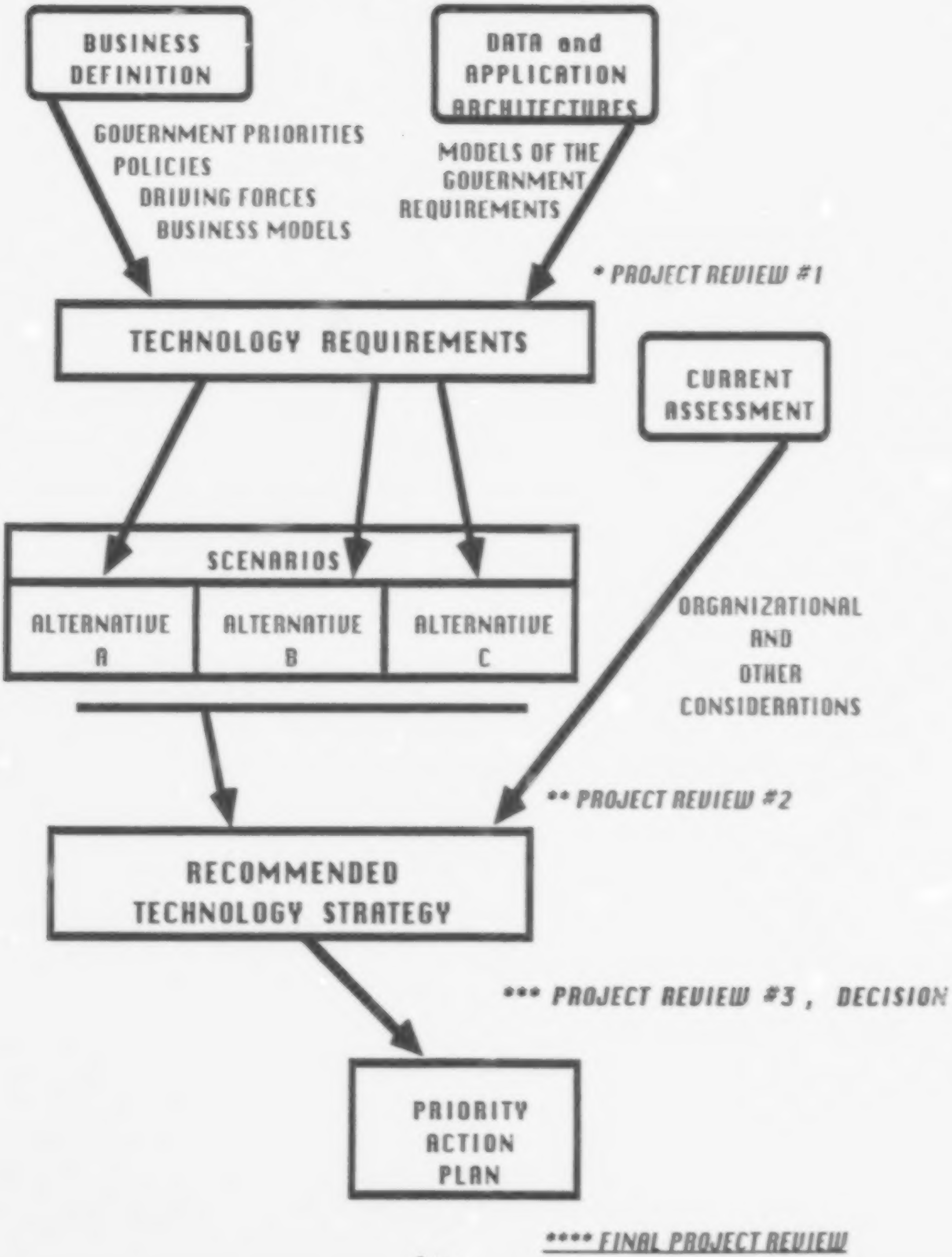
Technology Strategy

Six Project Phases

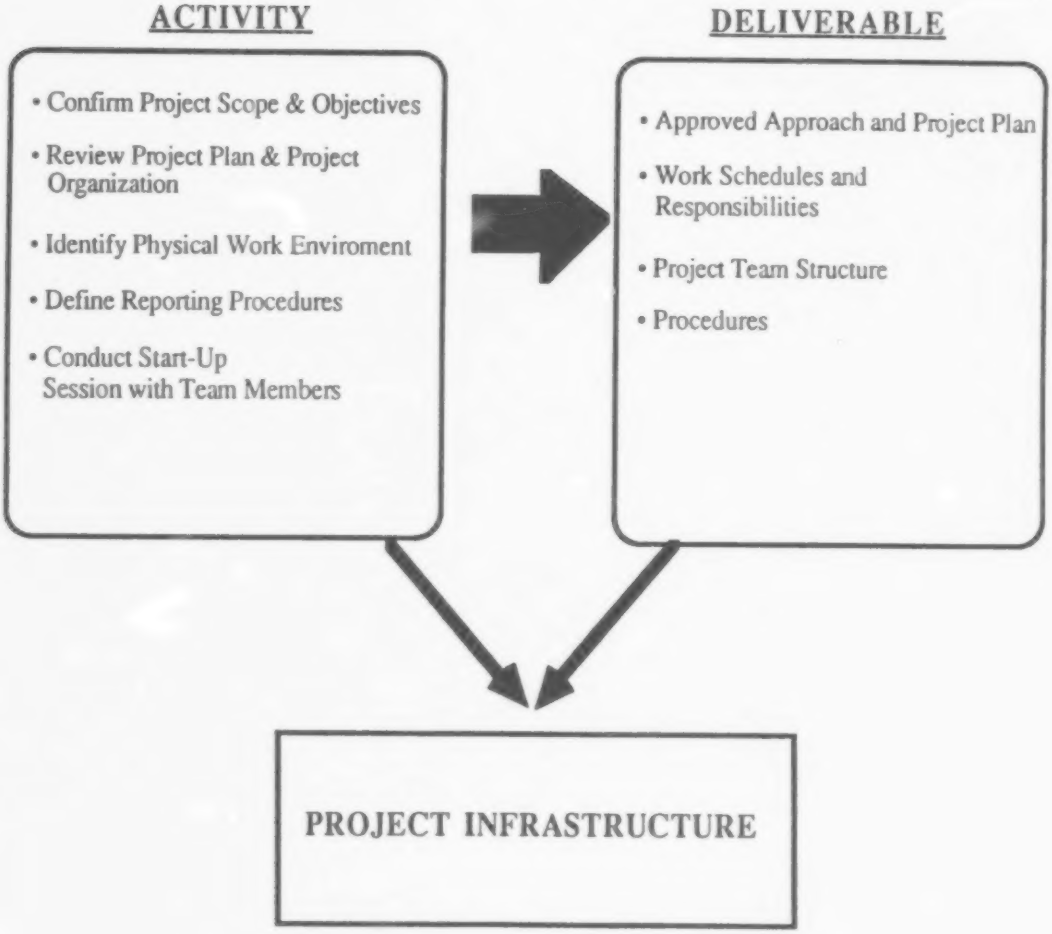
- **Business definition**
- **Develop architectural models:**
  - **data**
  - **applications**
- **Assess current technologies:**
  - **identify key technologies**
  - **catalog of applications**
  - **identify issues/problems**
- **Develop technology scenarios**
- **Recommend strategy**
- **Develop priority action plan**

NEW BRUNSWICK GOVERNMENT

TECHNOLOGY STRATEGY
STUDY APPROACH


BUSINESS DEFINITION
DATA and APPLICATION ARCHITECTURES
GOVERNMENT PRIORITIES
POLICIES
DRIVING FORCES
BUSINESS MODELS
MODELS OF THE GOVERNMENT
REQUIREMENTS
* PROJECT REVIEW #1
TECHNOLOGY REQUIREMENTS
CURRENT ASSESSMENT
SCENARIOS
ALTERNATIVE A
ALTERNATIVE B
ALTERNATIVE C
ORGANIZATIONAL AND OTHER CONSIDERATIONS
** PROJECT REVIEW #2
RECOMMENDED TECHNOLOGY STRATEGY
*** PROJECT REVIEW #3 , DECISION
PRIORITY ACTION PLAN
**** FINAL PROJECT REVIEW

PHASE 0: Start-Up



ACTIVITY

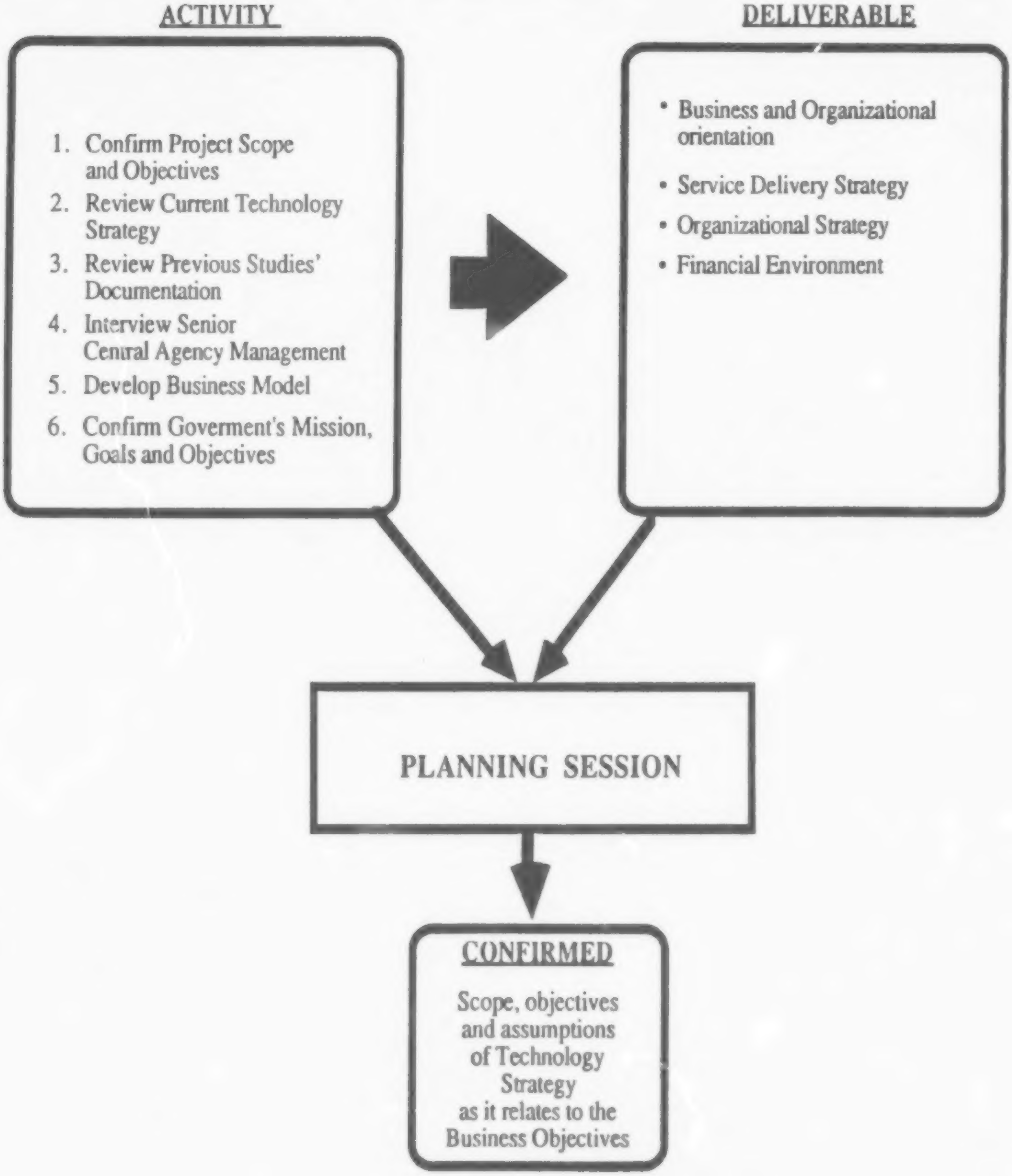
- Confirm Project Scope & Objectives
- Review Project Plan & Project Organization
- Identify Physical Work Enviroment
- Define Reporting Procedures
- Conduct Start-Up Session with Team Members

DELIVERABLE

- Approved Approach and Project Plan
- Work Schedules and Responsibilities
- Project Team Structure
- Procedures

PROJECT INFRASTRUCTURE

PHASE 1: Business Definition



ACTIVITY

1. Confirm Project Scope and Objectives
2. Review Current Technology Strategy
3. Review Previous Studies' Documentation
4. Interview Senior Central Agency Management
5. Develop Business Model
6. Confirm Goverment's Mission, Goals and Objectives

DELIVERABLE

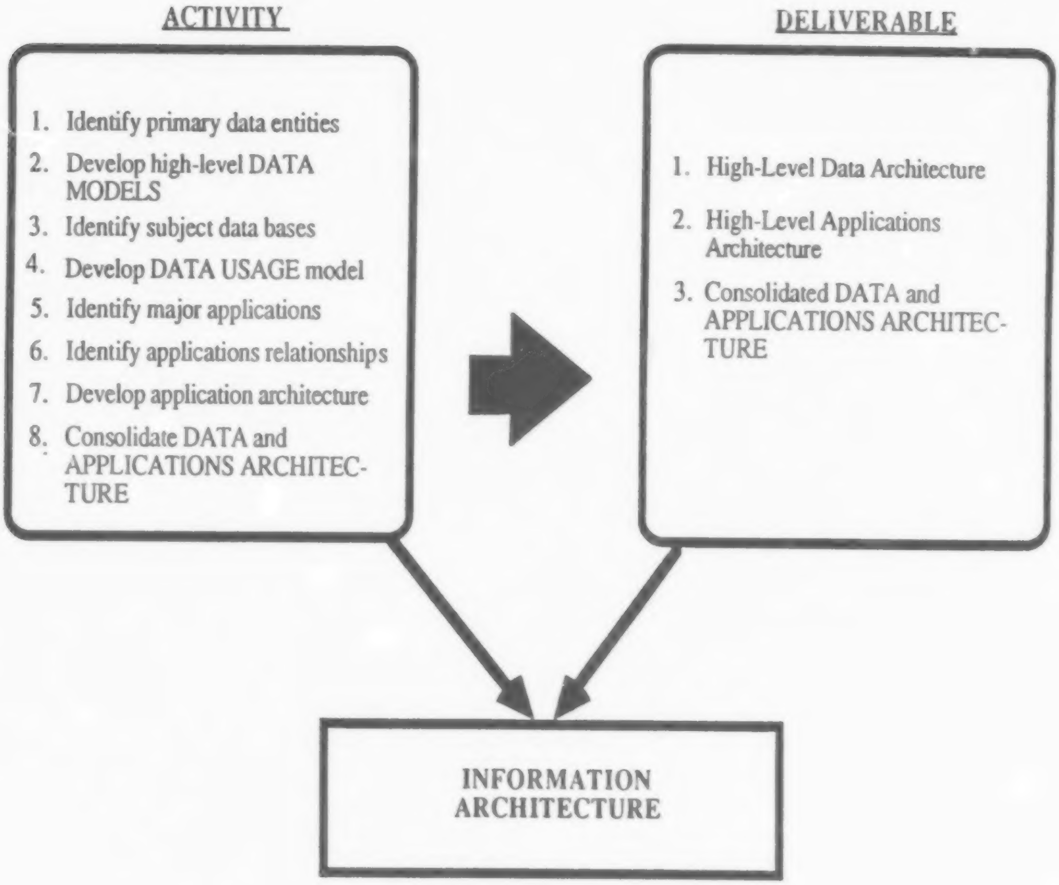
- Business and Organizational orientation
- Service Delivery Strategy
- Organizational Strategy
- Financial Environment

PLANNING SESSION

CONFIRMED

Scope, objectives
and assumptions
of Technology
Strategy
as it relates to the
Business Objectives

PHASE 2: Information Architecture



ACTIVITY

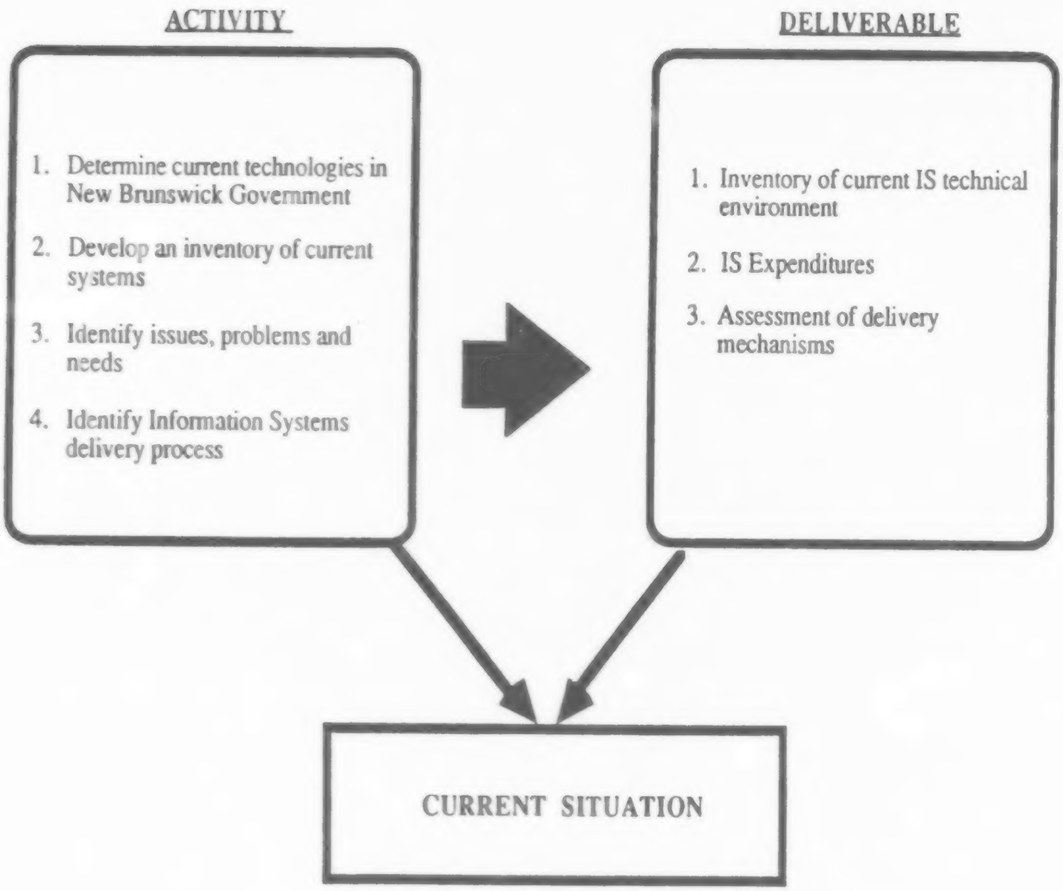
1. Identify primary data entities
2. Develop high-level DATA MODELS
3. Identify subject data bases
4. Develop DATA USAGE model
5. Identify major applications
6. Identify applications relationships
7. Develop application architecture
8. Consolidate DATA and APPLICATIONS ARCHITECTURE

DELIVERABLE

1. High-Level Data Architecture
2. High-Level Applications Architecture
3. Consolidated DATA and APPLICATIONS ARCHITECTURE

INFORMATION ARCHITECTURE

PHASE 3: Current Assessment



ACTIVITY

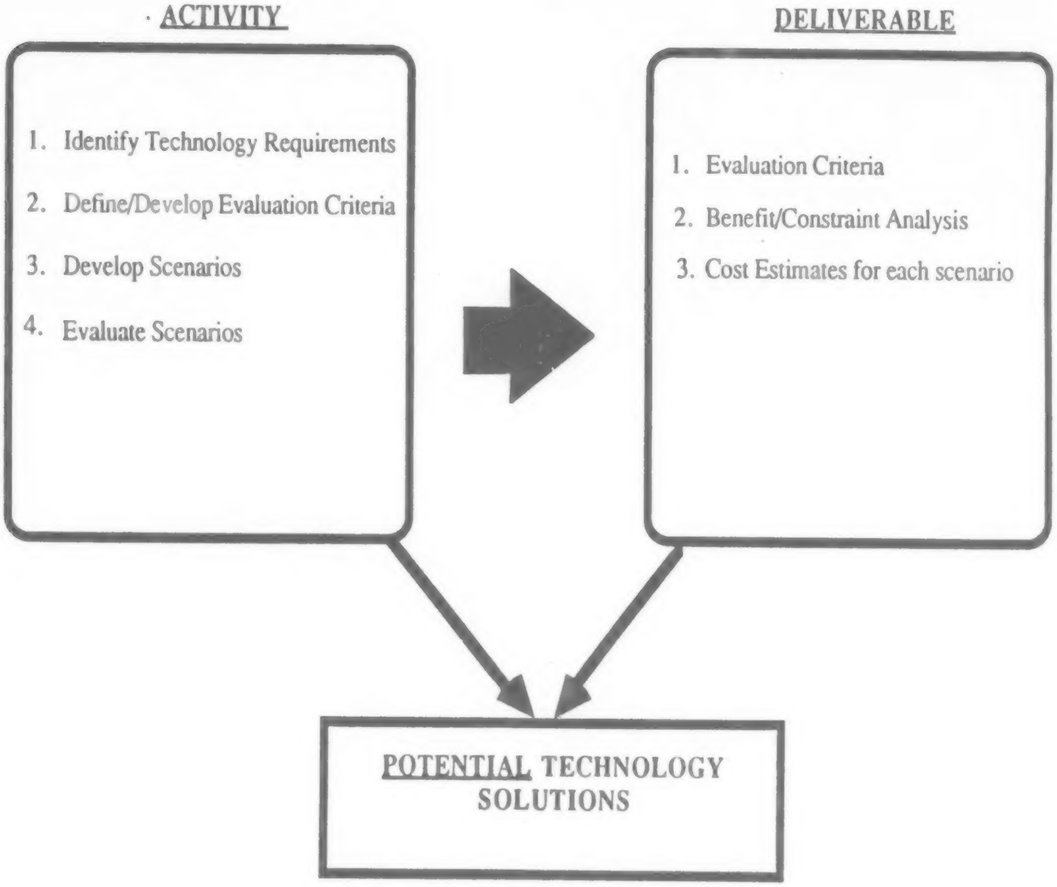
1. Determine current technologies in New Brunswick Government
2. Develop an inventory of current systems
3. Identify issues, problems and needs
4. Identify Information Systems delivery process

DELIVERABLE

1. Inventory of current IS technical environment
2. IS Expenditures
3. Assessment of delivery mechanisms

CURRENT SITUATION

PHASE 4: Develop and Evaluate Technology Architecture Alternatives



ACTIVITY

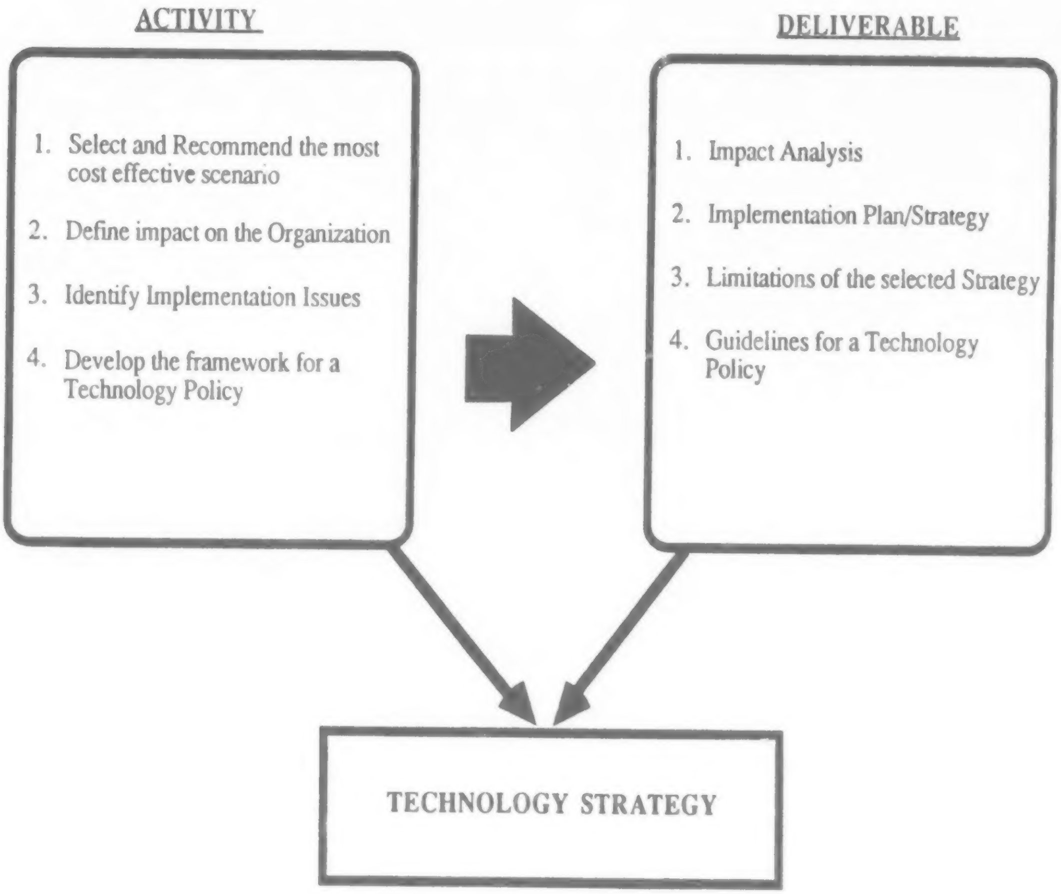
1. Identify Technology Requirements
2. Define/Develop Evaluation Criteria
3. Develop Scenarios
4. Evaluate Scenarios

DELIVERABLE

1. Evaluation Criteria
2. Benefit/Constraint Analysis
3. Cost Estimates for each scenario

POTENTIAL TECHNOLOGY SOLUTIONS

PHASE 5: Select/Recommend Technology Strategy



ACTIVITY

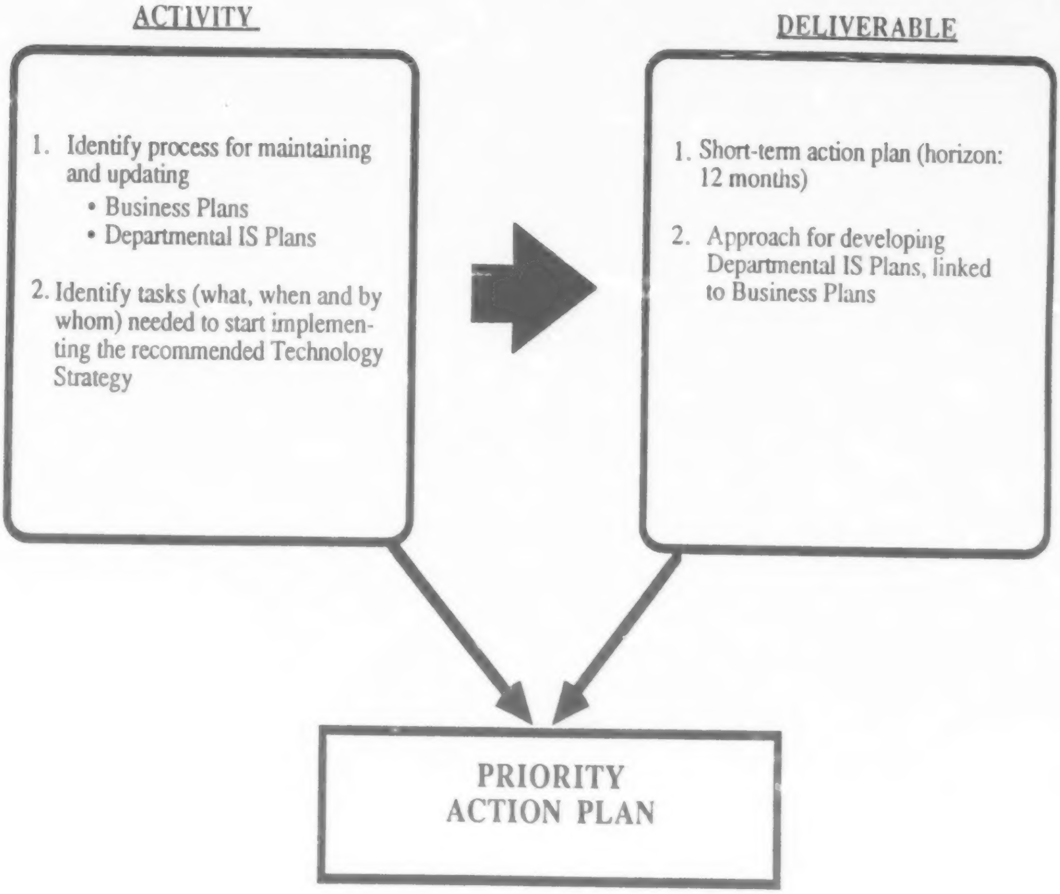
1. Select and Recommend the most cost effective scenario
2. Define impact on the Organization
3. Identify Implementation Issues
4. Develop the framework for a Technology Policy

DELIVERABLE

1. Impact Analysis
2. Implementation Plan/Strategy
3. Limitations of the selected Strategy
4. Guidelines for a Technology Policy

TECHNOLOGY STRATEGY

PHASE 6: Priority Action Plan



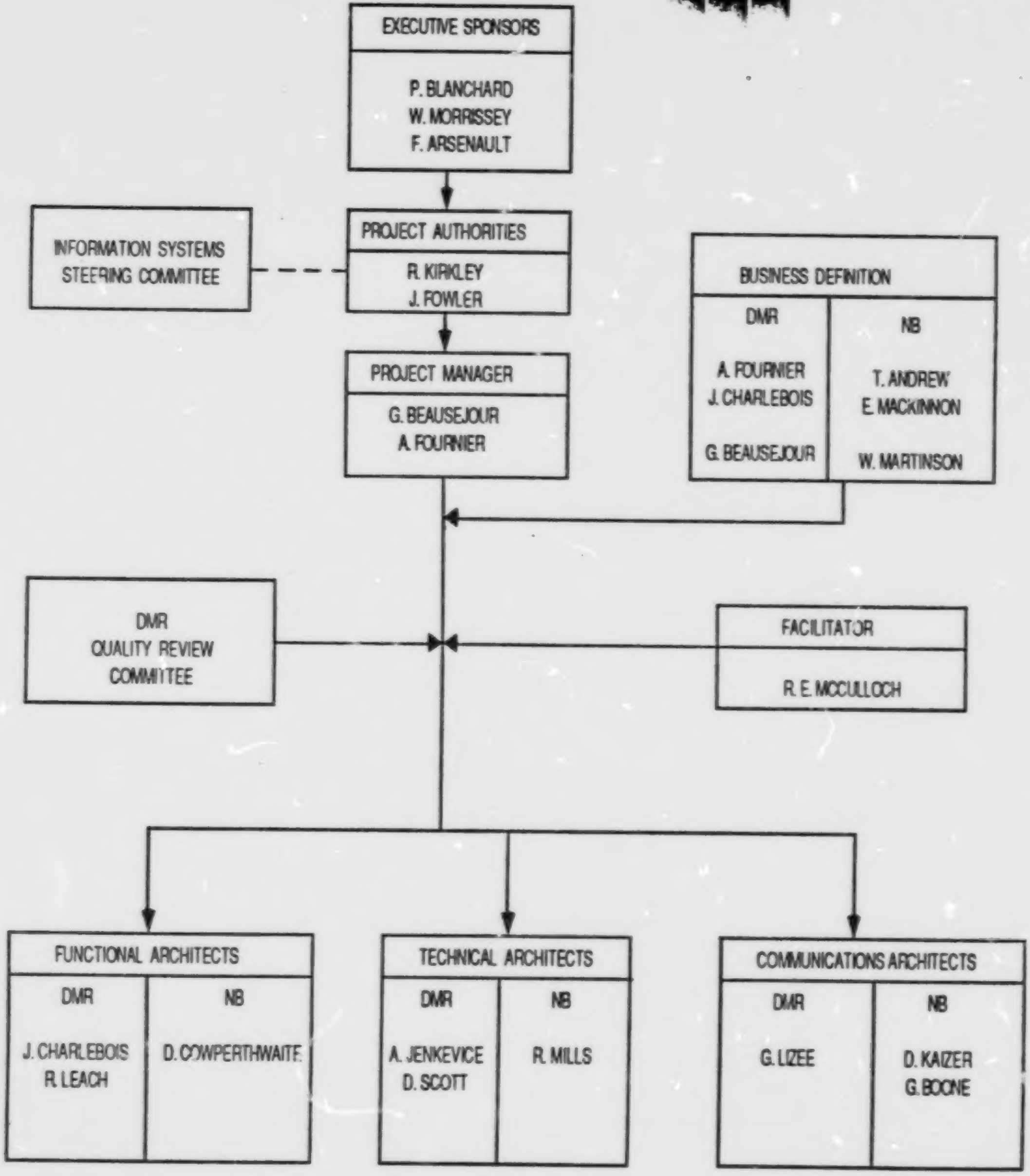
ACTIVITY

1. Identify process for maintaining and updating
    - Business Plans
    - Departmental IS Plans
2. Identify tasks (what, when and by whom) needed to start implementing the recommended Technology Strategy

DELIVERABLE

1. Short-term action plan (horizon: 12 months)
2. Approach for developing Departmental IS Plans, linked to Business Plans

PRIORITY
ACTION PLAN


EXECUTIVE SPONSORS
P. BLANCHARD
W. MORRISSEY
F. ARSENAULT
INFORMATION SYSTEMS STEERING COMMITTEE
PROJECT AUTHORITIES
R. KIRKLEY
J. FOWLER
BUSINESS DEFINITION
DMR
A. FOURNIER
J. CHARLEBOIS
G. BEAUSEJOUR
NB
T. ANDREW
E. MACKINNON
W. MARTINSON
PROJECT MANAGER
G. BEAUSEJOUR
A. FOURNIER
DMR QUALITY REVIEW COMMITTEE
FACILITATOR
R. E. MCCULLOCH
FUNCTIONAL ARCHITECTS
DMR
J. CHARLEBOIS
R. LEACH
NB
D. COWPERTHWAITE
TECHNICAL ARCHITECTS
DMR
A. JENKEVICE
D. SCOTT
NB
R. MILLS
COMMUNICATIONS ARCHITECTS
DMR
G. LIZEE
NB
D. KAIZER
G. BOONE

Micro Users Group Status Report

Presented by
Tom Parker

MICRO USERS GROUP MEMBERSHIP MATRIX

MEETING	# OF ATTENDEES	# ISD	TOTAL	# USER DEPTS.
1	29	9	38	14
2	24	9	33	16
3	33	8	41	15
4	34	11	45	15

MICRO USERS GROUP ORIGINS

OCTOBER ISD CLIENTS CONFERENCE ARTICULATES NEED

AD HOC COMMITTEE FORMED
* 3 CLIENTS PLUS ONE ISD REP

INITIAL MEETING NOV.27 .... MANDATE TO PROCEED

TODAY...

MICRO USERS GROUP ON-GOING PROJECTS

- APPLICATIONS INVENTORY

- HARDWARE/SOFTWARE QUESTIONNAIRE

- PRACTICAL ASSISTANCE

    > D. MEULHAUSER'S BOOK OF TIPS

    > FILE OF HELPFUL HINTS

- MICRO TENDER

- STUDIES AS NEEDED OR REQUESTED BY MEMBERSHIP

FUTURE DIRECTIONS - A FEW PROJECTIONS

* SPECIAL INTEREST SUB-GROUPS

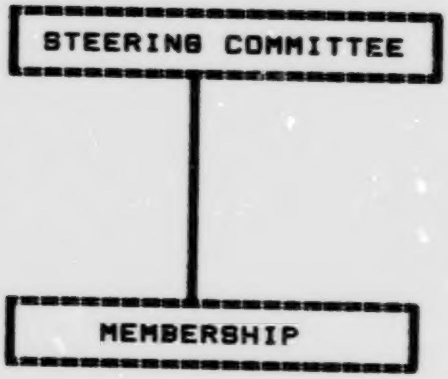
* INDUSTRY ACTION COMMITTEES

* NEWSLETTER, OTHER TYPES OF PUBLICATIONS

* INFORMATION/APPLICATION BANKS

* STATISTICS GATHERING

MICRO USERS GROUP ORGANIZATIONAL STRUCTURE


STEERING COMMITTEE
MEMBERSHIP

COMPOSITION

STEERING COMMITTEE............... 5 MEMBERS (ROTATING 6-12 MOS)

SECRETARY   ISD REP   MEMBER   MEMBER   CHAIRPERSON

MEMBERSHIP...................... OPEN TO ALL INTERESTED USERS

ISD MEMBERS (9)

ISD SUPPORT

- REP ON STEERING COMMITTEE
- FUNDING: VENUE AND EQUIPMENT RENTAL
- RECOGNITION

MICRO USERS GROUP TERMS OF REFERENCE

THE TERMS OF REFERENCE ARE STILL EVOLVING BUT WILL REFLECT OUR ACTIVITIES IN THE FOLLOWING AREAS:

* EDUCATION

* PROACTIVE

* INFORMATION NETWORK

* STANDARDS

FUTURE TOPICS FOR USER GROUP MEETINGS

- DESKTOP PUBLISHING/GLORIFIED WORD PROCESSING
- UTILITIES
- PUBLIC DOMAIN SOFTWARE
- COST BENEFIT ANALYSIS
- 80386 CLASS MACHINES
- LOCAL AREA NETWORKS
- NEW IBM OFFERINGS

MICRO USERS GROUP AGENDAS

DATE	TOPIC
NOV. 27	INITIAL MEETING/SETTING UP A MICRO
JAN. 22	EXPERIENCES WITH DBASE 111
FEB. 26	WORD PROCESSING
APR. 2	UTILITIES, DATA RECOVERY AND PRODUCTIVITY
MAY 19	MICRO TENDER WINNERS EQUIPMENT SHOW
JUNE	SPREADSHEETS

THE SECRET OF OUR SUCCESS

PARTICIPATION

Conference Wrap Up

Presented by
Gary Fraser and Gary Andrews

NB Government Information Systems Client Conference
April 22 & 23, 1987

Conference Wrap Up

There have now been three Information Systems Client Conferences.

The first was held May 21-22, 1986, focused on "Information Systems Division Services".

The second held October 21-22, 1986, focused on "Micro Computers".

The third held April 22-23, 1987, focused on "Communications".

We request that you take a few minutes and complete the conference evaluation form contained in your handout package and return it to Gary Andrews.

The Planning Committee suggests that the next conference take place in October 1987, specifically Wednesday and Thursday, October 21 - 22, at the same location. The committee also suggests that both the client community and the Information Systems Division be canvassed for potential topics. Would you please help us by sending in your suggested topics on the form contained in your handout package. The forms should be returned to Gary Andrews. If you are interested in serving on the next Client Conference Planning Committee, please indicate on the bottom of the form.

Topics for the next conference will be chosen from these submissions (one suggestion we have already received is office automation). We will be contacting three clients to form the planning committee for the next Client Conference scheduled in October. Once again, please send us your suggestions.

I hope you enjoyed this conference.

Thank You.

Suggested Topics For The Fourth I.S.D. Client Confernce

There has now been three Information Systems Client Conferences held to date. The first conference that was held May 21-22, 1986 focused on "Information Systems Division Services". The second held October 21-22, 1986 focused on "Micro Computers", and the third and most recent on April 22-23, 1987 the theme was "Communications". The next one is scheduled for October 21-22, 1987. Would you please take a moment to indicate what topics you would like to see covered and a main theme or focus for this fourth conference. These conferences are only as useful as we all make them - we look forward to receiving your suggestions.

Once we select possible topics we will be recruiting three clients to serve on the planning committee, to arrange this next conference.

Thank you for your assistance, if you have any questions or concerns, contact Gary Andrews (453-2259). Please return all comments to:

Gary Andrews
Information Systems Division
Room 613, Centennial Building

Dept: ____________________ Name: ____________________

Mini to Micro Demo

Demonstrated by
Gary Fraser

NB Government Information Systems Client Conference
April 22 & 23, 1987

Mini To Micro Demo

By Gary Fraser

Mini - IBM 5136 with 1.729 M6 Main Memory
200 M6 Disk Storage
25-30 Local Devices

Line 3 - Multi-Drop Line

- Utilize Gandalf LDS 309 Modems, 9600 Baud leased line from 5136 (Centennial Building) to an IBM PC with remote 5250 Emulation at CIC on York Street and to a Zenith PC and printer with remote 5250 Emulation at DRIE office on Brunswick and Regent.
- Demo terminal in fact is the CIC unit relocated as simply another drop on the line.
- PC can be used as stand-alone PC or be connected to the S/36 and emulate a 5250 terminal and have access to anything on the S/36.
- Security - Password based - When CIC and DRIE users access the S/36, they are restricted to a specific, limited menu. Additionally, controllers and/or lines can be varied off from the S/36 to totally restrict access.

NEWBED Bulletin Board

Demonstrated by
Bill Brydges

NB Government Information Systems Client Conference
April 22 & 23, 1987

NEWBED Bulletin Board

By Bill Brydges

Since March 1983, the Department of Education has operated an electronic bulletin board system. Designated NEWBED, the system provides users with three main functions. These are:

1. Messaging - both private and public messages
2. Short information files of current news
3. database of computer software for users

Access to NEWBED is through the service of DATAPAC and INET 2000, from the telephone system. Teachers, school districts, university faculty and colleagues from other government departments use the system.

The system is fully menu driven, with terminal emulation of many popular terminals. Except for password and file-name entry, the system is single-key stroke entry operated.

The operating system is the Total Bread Board System, from eSoft, Incorporated, Aurora, Colorado. TBBS software provides total flexibility in building a system and in administering it.

The system operates from the EDP Service Branch using a PC compatible computer with two 20 megabyte fixed disks. On-line storage is over 40 megabytes. Operation of the system is 24 hours per day, seven days per week.

FIS Online System Demo of ICC Communications Software

Demonstrated by
Dick Slipp

NB Government Information Systems Client Conference
April 22 & 23, 1987

FIS Online System Demo of I.C.C. Communications Software
By Dick Slipp

With the authorization of the Office of the Comptroller, the FIS Online System Project Team provided a demonstration of the Microcomputer based system implemented in the Department of Advanced Education and Training in April 1987.

The Office of the Comptroller will be providing formal information to Government Departments to update them with respect to the application itself.

The focus of the demonstration was on the Communications products being utilized in the application.

As indicated in a Data Center Evaluation Report, and as well by a presentation at the conference by I.S.D. Data Communications Analyst, Drew Ingraham, the Communications package from Intercomputer Communications Corporation (ICC) is recommended and supported by the Data Center for microcomputer connection to the UNISYS mainframe.

The ICC product is an all-in-one terminal emulation and file transfer product. The TE (Terminal Emulator ICC 500) supports UTS20 and UTS40 terminals, FCC to color translation, password protected CONFIG file, and MAPPER and DEMAND upload/download. The FX (File Transfer ICC 600) is a TIP based file transfer, which can be executed from DOS.

A synchronous communications board (ICC 1000) is necessary for implementation in the microcomputer.

One of the reasons FIS online used the product was based on the Conceptual Design decision to have a TIP based Transaction Input System for editing all FIS input as well as the required capability for download of FIS data to the microcomputer. That is, FIS needed a Terminal Emulator capabilty for TIP input, and ICC offered a valued consistency by its TIP based File Transfer. This allowed similar security and sign-on procedures for user execution of both application functions (Input and Download).

For a description of ICC basic technical data and special features contact the Data Center.

Transfer and Conversion of Micro WP Document to Wang (V Stern)

Demonstrated by
Susan Paul

VSterm
Version 2.0

MacSoft, INC.
5100 California Ave., Suite 126
Bakersfield, CA 93309
(805) 324-4291

VSterm is Wang VS 2110 Terminal Emulation with Document and File Transfer. This software runs on IBM and Wang Personal Computers (IBM compatibles).

On the VS side an Asynchronous (ADC) or Enhanced Asynchronous Device Controller (EADC) is required. Word Processing is not supported on an ADC. Word Processing is supported on an EADC but the data transfer rate is approximately 8 times slower as the ADC. This is due to data echos back to the PC - the documentatin for VSterm states, "Wang has promised to correct this problem."

VSterm emulates VS 2110, VS2110A and DEC VT-100 terminals. Baud rates supported are 300 to 19,200. Data, stop and parity bits can be redefined. Separate definition tables for the PC's screen, printer and keyboard can be user defined.

Logon sequences can be reduced to one keystroke on the PC. Also multiple keyboard definitions are supported.

Characters received from the VS can be redefined to become a PC display character.

Parallel printers are supported by VSterm for file listings and screen dumps. VS print files or consecutive files may be printed at the PC printer, stored on PC disk or both.

DOCUMENT TRANSFERS:

In order to carry out document transfers to and from the VS a program called PCVSLINK must be loaded on the VS and the VSterm document conversions on the PC.

The following conversions are available:

Multimate
Wordstar
WordPerfect
Microsoft Word
Wang PC WP
DisplayWrite
ASCII

Conversions can be run automatically during the file transfer or after the files have been transferred to the PC.

Print files sent to the VS can be automatically placed in the printer queue. Print files sent to the PC may be printed immediately, stored on the PC disk or both.

VS data files on the PC can be translated to DIF format to be used with Lotus 1-2-3, dBase II and III and Visicalc.

Through the Filter utility transfer of data from PC applications to VS application programs can be automated.

Current mapping of the keyboard can be displayed through the VSKEYS utility.

Support of accented characters has not been tested. To be carried out at a later date.

Any questions regarding this article can be directed to Susan Paul (453-4488) or Danny Keizer (453-4487).

Microcomputer to Microcomputer File Transfer

Demonstrated by
Glen Boyd

MICROCOMPUTER TO MICROCOMPUTER FILE TRANSFER

by

Glen Boyd

ISD Conference
Fredericton, N.B.
April 22 - 23, 1987

The Department of Transportation Information Systems Division's demonstration consisted of file transfers between two microcomputers via modems, using the PROCOMM communication package. The particular application was developed as part of the Department's Automated Fuel Dispensing System (AFDS). dBASE database files currently being mailed to the twelve Districts on floppy diskettes will now be sent from Head Office directly to the Districts' microcomputers.

The Department of Supply and Services Information Systems Division had prepared a report on asynchronous communication software in which PROCOMM was one of the products evaluated. In fact, it was recommended that this program be tested before purchasing any other. Since the program being considered for the AFDS, CROSSTALK XVI, was imposing certain restrictions, a copy of PROCOMM was obtained for evaluating. This is permissable as it is "user supported software" whereby "non-registered users are granted a limited license to use PROCOMM on a trial basis for the purpose of determining whether PROCOMM is suitable for their needs".

The basic requirements for micro to micro communications are:

- a serial port on each machine
- two modems
- two RS-232C cables with 25-pin DB-25 connectors
- two RJ-11 modular single line phone jacks with cables

NOTES:

(1) Some microcomputers come equipped with a serial port as standard equipment. In the case of, for example, a Corona desktop, this port can be configured for either a printer (a DTE, "Data Terminal Equipment" device) or a modem (a DCE, "Data Communications Equipment" device). This is controlled by the location of an 8-pin "jumper": if it is in socket J5 the port is set for DTE; in socket J6 sets it for DCE.

(2) "Modem" is an acronym of modulator/demodulator. It converts the computer's digital signals to analog so that they may be transmitted over telephone lines. On the receiving end, the modem converts the analog signals back to digital.

One specification of a modem is its speed; another refers to its sophistication; "dumb" or "smart". For this application, "smart modems" operating at a speed of 1200 bits per second (bps) were used. Additionally it is generally advisable to use a modem that is "Hayes compatible". Hayes Smartmodem 1200's were used for the demo.

Normal "voice grade" telephone lines are usually sufficient. In some areas, however, if there is "noise" on the line, communications may suffer and it will be necessary to arrange with the telephone company for a "conditioned" line.

(3) A microcomputer vendor can manufacture a 6-foot RS-232C cable for approximately $60.00. It should be noted, though, that the components can be purchased at a radio/electronics supply shop:

6-feet of cable	- $ 3.00
2-DB-25 connectors	- $14.00

The only tools required for assembly are scissors and a pair of pliers.

After installing PROCOMM on the PC's fixed disks, the program had to be configured. The following setups were performed:

Modem setup - The only change required was in the duration and spacing of touch tones. The default was 70 milliseconds which was too fast and caused the modem to "hang up" on some occasions. The delay was increased to 180 milliseconds.

Terminal setup - Only one change was required here: specifying the terminal emulation. ANSI-BBS was selected. This "mode processes the ANSI codes given in the DOS technical reference manual, and behaves in the same manner as the DOS ANSI.SYS device driver".

Host mode setup - Host ID string: this is the identifier which appears on a caller's terminal to identify the site reached. Host mode password: the password required to access the system. DOS shell password: the password required to gain system-level access.
Note that "Host mode" had to be set on only one machine as the other would be the "caller".

Line settings - 1200 bits per second, no parity, 8 data bits, 1 stop bit and communication port COM1 were selected.

PROCOMM supports "command files"; that is, it has its own programming language. If a sequence of commands, ie. phone number to dial, password to host system, etc. is stored in such a file, the program will execute these steps just as if they had been typed in manually.

When the program is first invoked, it searches for a command file called PROFILE.CMD. If this file is found, PROCOMM immediately executes the steps in it. If the file does not exist, PROCOMM just remains in TERMINAL mode.

To invoke HOST mode (tell the computer to wait for a call) the key sequence CTRL Q is used. HOST mode may be invoked from a command file by the command HOST. Thus, to make PROCOMM go into HOST mode immediately upon startup, a PROFILE.CMD was created containing the word HOST.

Next a program was written on the "calling" micro to dial the host, log on with the password, perform file transfers and then log off.

The program first opens a log file which will record the status of the call. Next it dials a specified number and will wait up to thirty seconds for a connect message. If a connection is not established, a warning is displayed and written to the log file and the program hangs up. Upon connection the program transmits the caller's name and password and waits for the host's menu prompt.

Now the "shell" option becomes important. Since PROCOMM is located in its own "directory" on the host's fixed disk, it is convenient to transfer the files to the appropriate directory, rather than to the PROCOMM directory from which the host operator would then have to copy it. The "shell" password is given and the caller now has system-level access to the host, where the "change directory" command is issued.

The "KERMIT" file transfer protocol was selected for this application. The "upload" command is issued and two files are sent to the host. Then the caller logs off.

An obscure feature of PROCOMM allows a caller to shut down a HOST site and return it to the operating system level. This is performed by entering a CTRL Z and then giving the "shell" password. A problem was encountered in putting this sequence in the command file because the DOS editor interprets this as an end-of-file. The problem was circumvented eventually by generating CTRL with the carat (^) symbol, located on the numeric 6 key.

The application for which this procedure was developed is a dBASE system. It would be more convenient for the operator to invoke PROCOMM from this environment, rather than first having to manually quit dBASE. This is easily accomplished because dBASE allows DOS commands to be issued by preceding the command with an exclamation mark (!).

DOS "batch files" were created to invoke PROCOMM and run the individual ".CMD" files to dial each District. Thus, the dBASE program merely calls each of the "batch files" in turn.

PROCOMM appears to be an effective communication tool for this application. Because of the relatively small file size, transfers can be performed in several minutes. Long distance phone charges are therefore competitive with the cost and time involved in mailing diskettes.

In an attempt to minimize phone charges, the "WATS" line was tested against direct dialling. With the "WATS" line, however, occasional transmission errors occurred requiring the resending of packets and consequently longer connect times.

The PROCOMM manual states that the modem's "carrier detect" (CD) (DIP switch 6 up on the HAYES 1200) must be set to follow the true state of the carrier. This is in conflict with the AUTOPOLL program's requirement that carrier detect must always be "TRUE". (It would be inconvenient to require the operators to change settings when going from AUTOPOLL to PROCOMM.) During the testing, however, PROCOMM worked successfully with carrier detect always on.

A listing of the PROCOMM calling program follows this report.

```
CLEAR  : clear the screen
LOG OPEN "DIALSTAT.LOG"  : open the log file
IF NOT LINKED
LOCATE 11.27  : display message that dialling commences
MESSAGE "+------------------------+"
LOCATE 12.27
MESSAGE "¦¦  DIALLING DISTRICT 01  ¦¦"
LOCATE 13.27
MESSAGE "¦¦     ( Updates today )   ¦¦"
LOCATE 14.27
MESSAGE "+------------------------+"
TRANSMIT "ATDT 4539867!"  : issue dial command
ENDIF
WAITFOR "CONNECT 1200"  : wait up to 30 seconds for connection
IF NOT WAITFOR  : if no connection, hang up and display warning
HANGUP
CLEAR
LOCATE 16.19
MESSAGE "*** WARNING: DISTRICT 01 NOT RESPONDING ***"
ALARM 5
LOG CLOSE  : close status log
QUIT  ; exit PROCOMM
ENDIF
PAUSE 1  : wait 1 second then issue a carriage return
TRANSMIT "!"
PAUSE 1
TRANSMIT "!"
WAITFOR "Name: "  : wait for host prompt
GOSUB COMMCHCK  : subprogram to check if prompt received
TRANSMIT "GLEN BOYD!"  : transmit caller's name
WAITFOR "Password: "  ; wait for host password prompt
GOSUB COMMCHCK
TRANSMIT "PASSWORD!"  ; send password
WAITFOR "Accepted"  ; waitfor host's acceptance of password
GOSUB COMMCHCK
WAITFOR "Your choice? "  : wait for host menu
GOSUB COMMCHCK
TRANSMIT "S!"  : select "SHELL"
WAITFOR "Password: "  ; wait for host password prompt
GOSUB COMMCHCK
TRANSMIT "SHELL!"  ; send "SHELL" password
WAITFOR "C:\PROCOMM>"  ; check that host is in proper directory
GOSUB COMMCHCK
TRANSMIT "CD C:\DBASE\FUEL!"  : change directory on host
WAITFOR "C:\DBASE\FUEL>"  : check that directory exists
GOSUB COMMCHCK
TRANSMIT "DEL MESSAGE.TXT!"  : delete text file
WAITFOR "C:\DBASE\FUEL>"
GOSUB COMMCHCK
TRANSMIT "DEL UPDATE.DBF!"  : delete dBASE file
WAITFOR "C:\DBASE\FUEL>"
GOSUB COMMCHCK
TRANSMIT "EXIT!"  : return host to terminal mode
```

```
WAITFOR "Your choice? "
GOSUB COMMCHCK
TRANSMIT "U!"  : select "UPLOAD"
WAITFOR "Your choice? "
GOSUB COMMCHCK
TRANSMIT "K!"  : select KERMIT protocol
WAITFOR "Begin your transfer procedure."
GOSUB COMMCHCK
SENDFILE KERMIT "C:\DBASE\FUEL\MESSAGE.TXT"  : transfer file
WAITFOR "Your choice? "
GOSUB COMMCHCK
TRANSMIT "U!"  : select "UPLOAD" for another file
WAITFOR "Your choice? "
GOSUB COMMCHCK
TRANSMIT "K!"  : select KERMIT
WAITFOR "Begin your transfer procedure."
GOSUB COMMCHCK
SENDFILE KERMIT "UPDATE.DBF"  : transfer another file
WAITFOR "Your choice? "
GOSUB COMMCHCK
TRANSMIT "^Z!"  : shut down host site
WAITFOR "Password: "
TRANSMIT "SHELL!"  : password required for this
HANGUP  ; hangup caller's phone
LOG CLOSE  ; close status log
QUIT  ; exit PROCOMM
COMMCHCK:  : subprogram to check if correct prompt received
IF NOT WAITFOR
HANGUP
CLEAR
LOCATE 16,11
MESSAGE "*** WARNING: COMMUNICATION LOST - TRANSFER INCOMPLETE ***"
ALARM 5
LOG CLOSE
QUIT
ENDIF
RETURN
```

Mapper Graphics Demonstration

Demonstrated by
Art Clogg

NB Government Information Systems Client Conference
April 22 & 23, 1987

Mapper Graphics Demonstration
By Art Clogg

MAPPER is capable of producing a full range of charts and graphics. There are specific hardware and software requirements. The example charts were produced using a Sperry PC compatible and a color monitor, a PEP graphics board and a Syncsmart modem, with a Hewlett Packard 7475a plotter. Other configurations are possible.

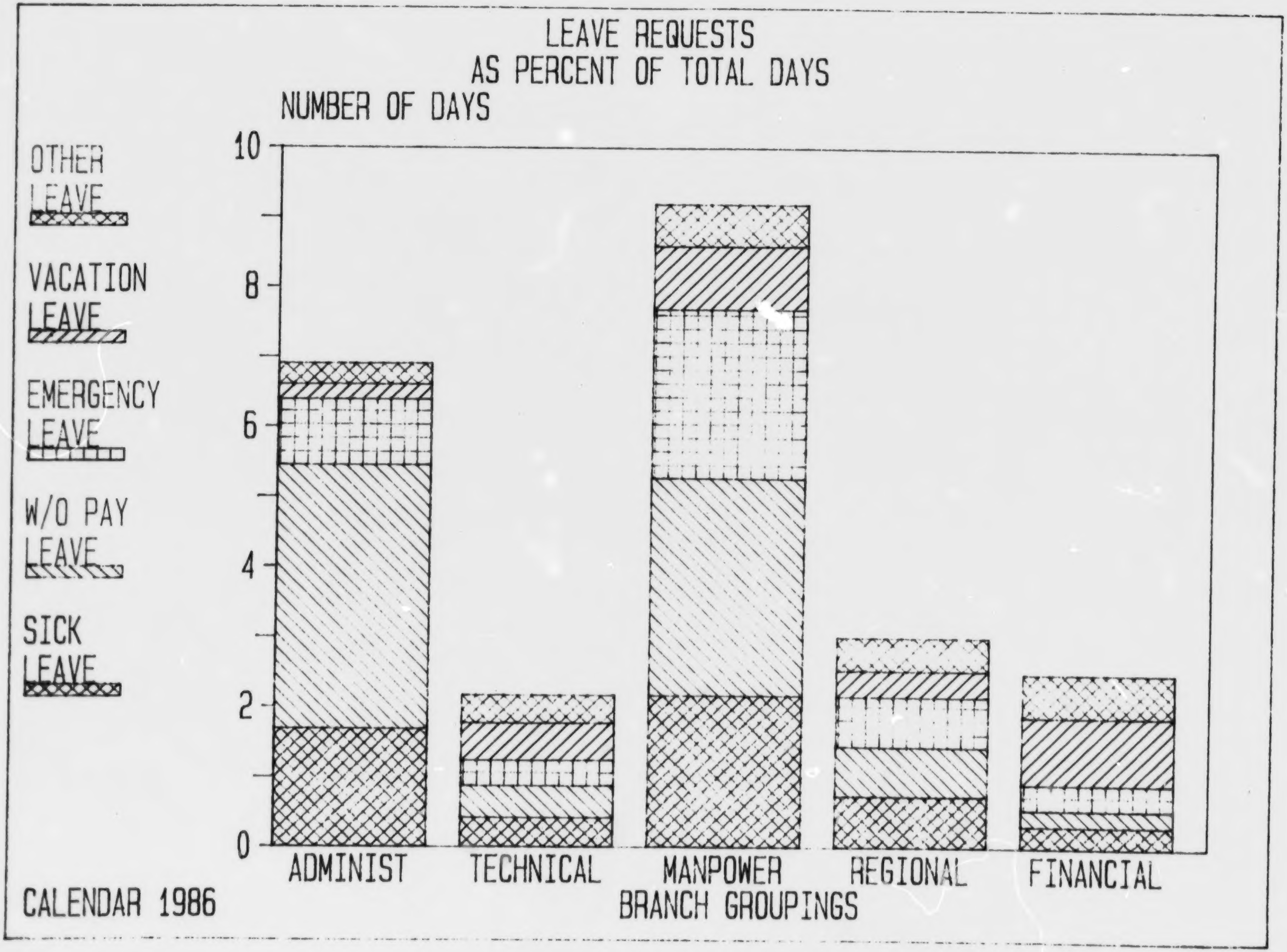
A potential user should consult the Mapper User Guice (UP9193.3 level 31R1, section 13) or Word Processing and Color Graphics (PK-0575 level 32R1) for more detail. Five graph types are currently available:

Pie Chart (PIEG)
Bar Graph (BARG)
Scatter Chart (SCAT)
Line Chart (LINEG)
Text Chart (TEXT)

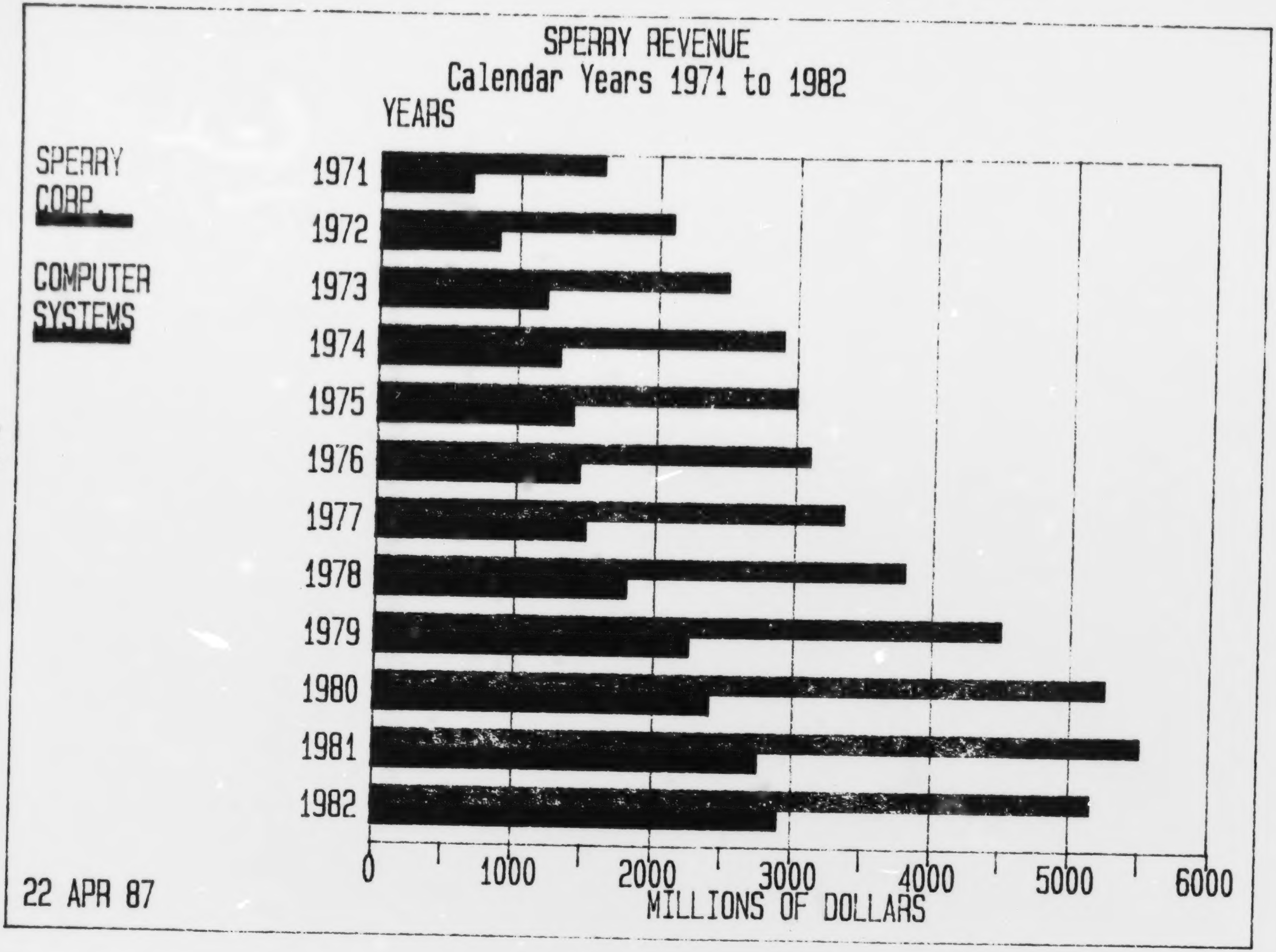
The MAPPER run names are in braces, each of these contains many charting options and HELP documentation. In addition there is a global run (CHART) which provides access to all of the above.

Assistance in getting your set-up to function can be obtained from Data Base Administration by either Art Clogg at -8874 or Don McDonald at -8869.

Thanks are due to UNISYS and the Access Center for the loan of the equipment.

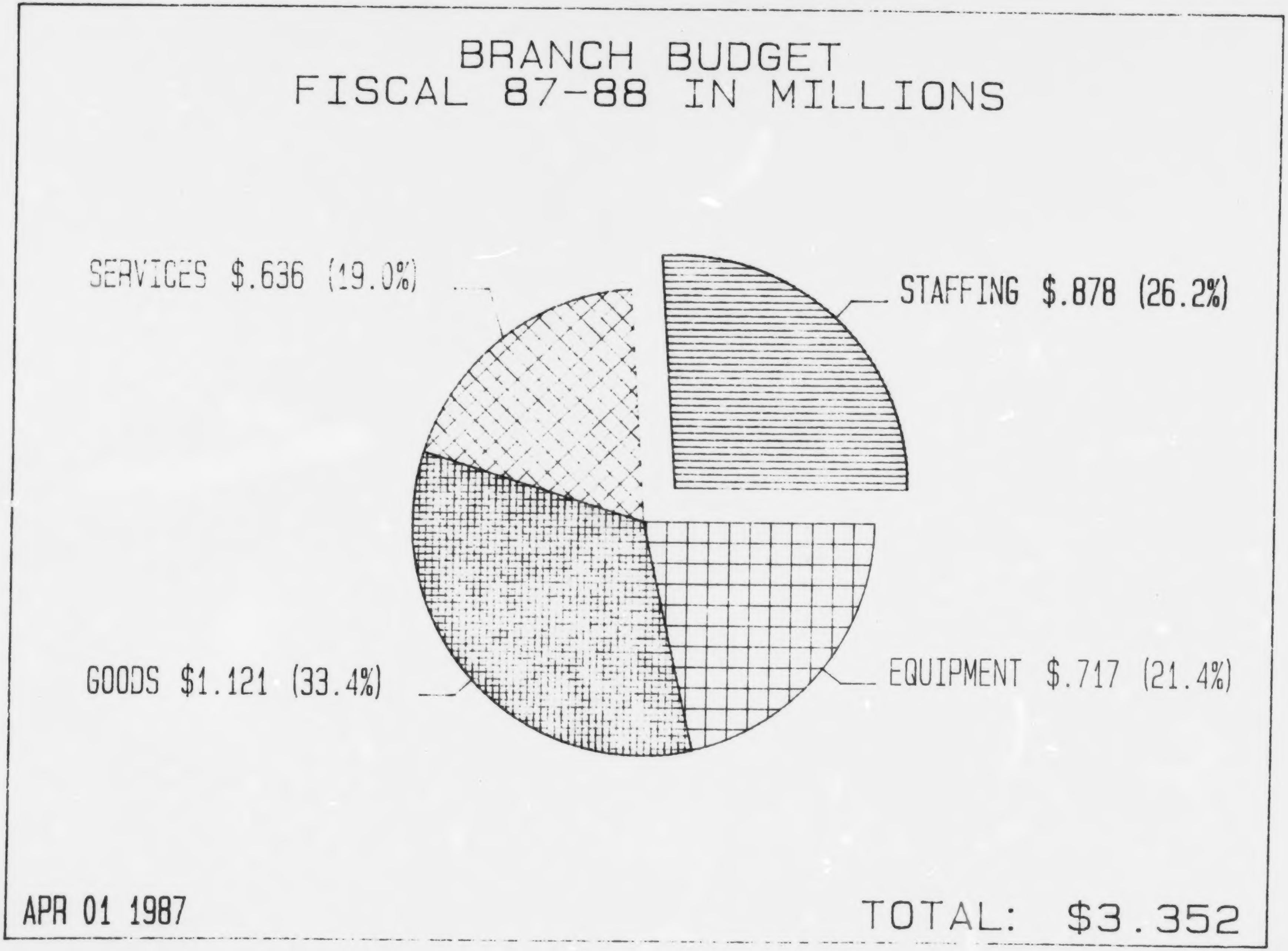


LEAVE REQUESTS
AS PERCENT OF TOTAL DAYS



SPERRY REVENUE
Calendar Years 1971 to 1982

22 APR 87


BRANCH BUDGET
FISCAL 87-88 IN MILLIONS
SERVICES $.636 (19.0%)
STAFFING $.878 (26.2%)
GOODS $1.121 (33.4%)
EQUIPMENT $.717 (21.4%)
APR 01 1987
TOTAL: $3.352

This is a TITLE line

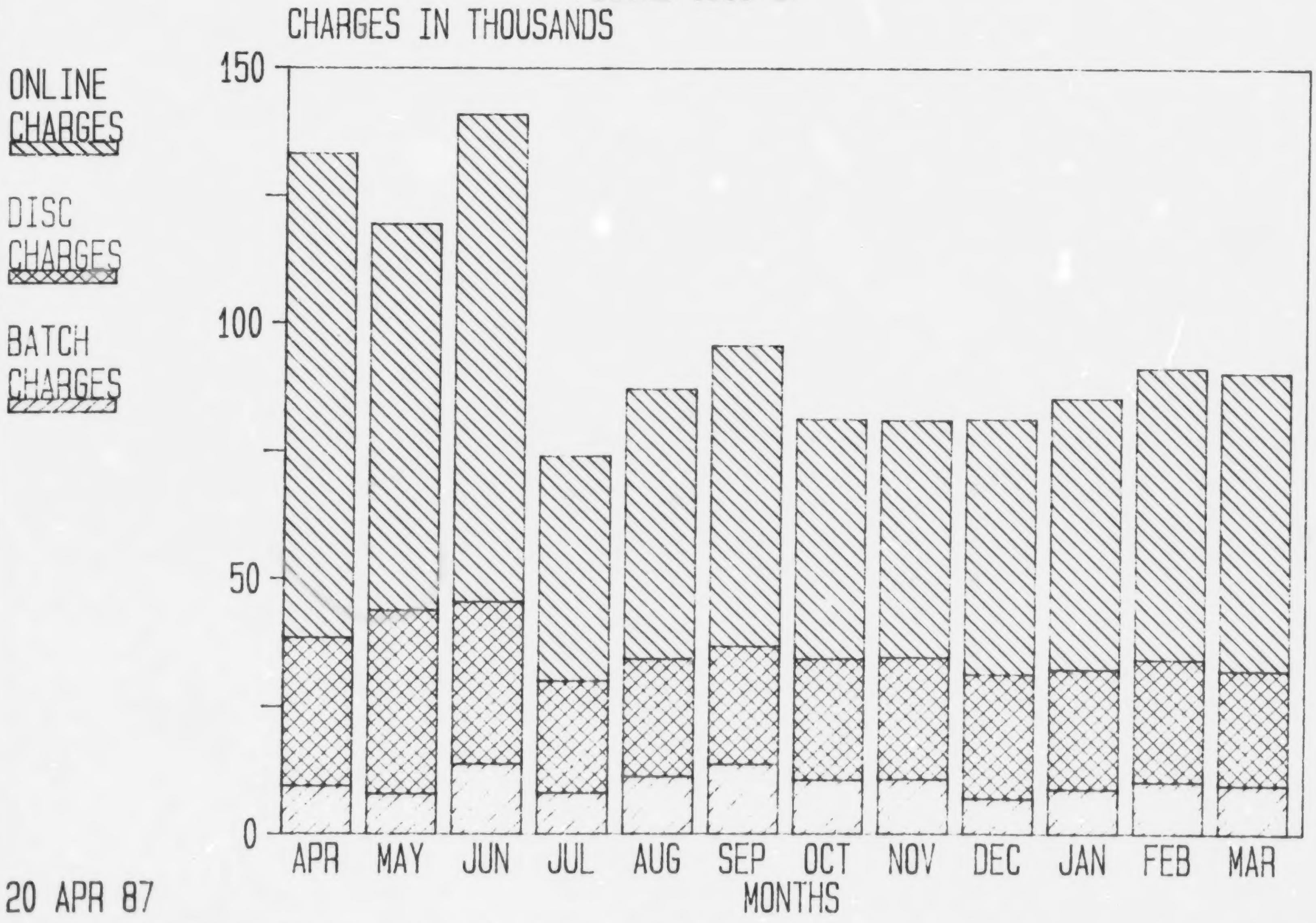
- This is a BULLET line
  - This is a DASH line
    CONTINUATION of a dash line

SMALL letters

MEDIUM letters

LARGE letters

MAPPER USAGE IN DOLLARS
FISCAL 1986-87



Agenda

NB Government I.S. Conference

Fredericton Motor Inn

April 22 & 23, 1987

Agenda

Wednesday, April 22, 1987

Time	General Topics
8:00	Registration
8:30	Introduction to conference by Jerrie Fowler
8:35	Recap of the last conference presented by David Loukes
8:45	Introduction to communications by Emilie Sousa, Gordon Boone, Glen Boyd and Drew Ingraham
10:00	Nutrition Break
10:30	Communications Architecture by Art Caston, DMR
11:30	Status report on ISD's communication study by ISD presented by Danny Kelzer
12:30	Lunch - soup and sandwiches
1:30	An overview of DMR's communication study by Blaine Atkinson
2:30	Demos such as micro to mainframe link products etc., will be run during break times and on Day One from 2:00 to 7:00 pm.
5:00	Social Hour/Informal Discussions

Conférence sur les systèmes informatiques du gouvernement du N.-B.

Fredericton Motor Inn,

Les 22 et 23 avril 1987

Ordre du jour

Le mercredi 22 avril 1987

Heure	Sujets généraux
8 h	Inscription
8 h 30	Mot d'introduction à la conférence par Jerrie Fowler
8 h 35	Récapitulation de la dernière conférence par David Loukes
8 h 45	Introduction aux communications par Emilie Sousa, Gordon Boone, Glen Boyd et Drew Ingraham
10 h	Pause
10 h 30	Exposé sur l'architecture des communications, présenté par Art Caston de DMR
11 h 30	Danny Kelzer fait le point sur l'étude réalisée par la DSI relativement aux communications
12 h 30	Déjeuner - soupe et sandwiches
13 h 30	Blaine Arkinson donne un aperçu de l'étude sur les communications réalisée par DMR
14 h 30	Des démonstrateurs, par exemple des produits de liaison entre des micro-ordinateurs et le gros ordinateur, etc., seront présentés pendant les pauses ainsi que de 14 h à 19 h la première journée
17 h	Période de rencontre sociale et de discussions

NB Government I.S. Conference	**Conférence sur les systèmes informatiques du gouvernement du N.-B.**
Fredericton Motor Inn	**Fredericton Motor Inn,**
April 22 & 23, 1987	**Les 22 et 23 avril 1987**
Agenda	**Ordre du jour**

Thursday, April 23, 1987		Le jeudi 23 avril 1987	
Time	Micro Topics	Heure	Sujets précis
8:30	Information System communication discussions beginning with Emilia Sousa on Local Area Networks, Gary Fraser on Mini Networks and Drew Ingraham on ISD's Network; moderated by Charlie Chiasson	8 h 30	Discussions sur les communications des systèmes informatiques. D'abord, exposé de Emilia Sousa sur les réseaux de la région, puis celui de Gary Fraser sur le sujet des mini-réseaux; enfin, Drew Ingraham nous parle du réseau de la DSI. Le tout est animé par Charlie Chiasson.
10:30	Nutrition Break	10 h 30	Pause
11:00	An overview of the Multivendor Networking Project	11 h	Un représentant de la Division va faire le point sur le project du reseau pour accomoder les systemes multiples
11:45	Results of the Micro Tender by Charlie Chiasson	11 h 45	Charlie Chiasson fait connaitre les résultats de l'appel d'offres pour la fourniture de micro-ordinateurs
12:20	Lunch - soup and sandwiches	12 h 20	Déjeuner - soupe et sandwiches
1:30	HRIS Project status report by Colin Payne	13 h 30	Rapport sur la progression du projet relatif au SIRH, par Colin Payne
2:15	Technology Strategy for the NB Government by Jerrie Fowler	14 h 15	Exposé sur la stratégie technologique du gouvernement du N.-B., par Jerrie Fowler
2:45	Nutrition Break	14 h 45	Pause
3:15	Micro Users Group status report by Tom Parker	15 h 15	Rapport sur le groupe d'usagers des micro-ordinateurs, par Tom Parker
3:45	Conference wrap up, evaluation forms, next one, etc., by Gary Andrews	15 h 45	Conclusion de la conférence, formules d'évaluation, prochaine conférence, etc., par Gary Andrews
*Note	Demos will be run during break times, on Day One from 2:00 to 7:00 pm, and on Day Two from 8:30 to 1:30.	* Note	Des démonstrateurs seront en montre pendant les pauses ainsi que de 14 h à 19 h la première journée, et de 8 h 30 à 13 h 30 la deuxième journée.

NB Government I.S. Conference

Fredericton Motor Inn

April 22 & 23, 1987

Agenda

Thursday, April 23, 1987

Time	Micro Topics
8:30	Information System communication discussions beginning with Emilia Sousa on Local Area Networks, Gary Fraser on Mini Networks and Drew Ingraham on ISD's Network; moderated by Charlie Chiasson
10:30	Nutrition Break
11:00	An overview of the Multivendor Networking Project
11:45	Results of the Micro Tender by Charlie Chiasson
12:20	Lunch - soup and sandwiches
1:30	HRIS Project status report by Colin Payne
2:15	Technology Strategy for the NB Government by Jerrie Fowler
2:45	Nutrition Break
3:15	Micro Users Group status report by Tom Parker
3:45	Conference wrap up, evaluation forms, next one, etc., by Gary Andrews
*Note	Demos will be run during break times, on Day One from 2:00 to 7:00 pm, and on Day Two from 8:30 to 1:30.

Conférence sur les systèmes informatiques du gouvernement du N.-B.

Fredericton Motor Inn,

Les 22 et 23 avril 1987

Ordre du jour

Le jeudi 23 avril 1987

Heure	Sujets précis
8 h 30	Discussions sur les communications des systèmes informatiques. D'abord, exposé de Emilia Sousa sur les réseaux de la région, puis celui de Gary Fraser sur le sujet des mini-réseaux; enfin, Drew Ingraham nous parle du réseau de la DSI. Le tout est animé par Charlie Chiasson.
10 h 30	Pause
11 h	Un représentant de la Division va faire le point sur le project du reseau pour accomoder les systemes multiples
11 h 45	Charlie Chiasson fait connaitre les résultats de l'appel d'offres pour la fourniture de micro-ordinateurs
12 h 20	Déjeuner - soupe et sandwiches
13 h 30	Rapport sur la progression du projet relatif au SIRH, par Colin Payne
14 h 15	Exposé sur la stratégie technologique du gouvernement du N.-B., par Jerrie Fowler
14 h 45	Pause
15 h 15	Rapport sur le groupe d'usagers des micro-ordinateurs, par Tom Parker
15 h 45	Conclusion de la conférence, formules d'évaluation, prochaine conférence, etc., par Gary Andrews
* Nota	Des démonstrateurs seront en montre pendant les pauses ainsi que de 14 h à 19 h la première journée, et de 8 h 30 à 13 h 30 la deuxième journée.

NB Government I.S. Conference

Fredericton Motor Inn

April 22 & 23, 1987

Agenda

Wednesday, April 22, 1987

Time	General Topics
8:00	Registration
8:30	Introduction to conference by Jerrie Fowler
8:35	Recap of the last conference presented by David Loukes
8:45	Introduction to communications by Emilia Sousa, Gordon Boone, Glen Boyd and Drew Ingraham
10:00	Nutrition Break
10:30	Communications Architecture by Art Caston, DMR
11:30	Status report on ISD's communication study by ISD presented by Danny Kelzer
12:30	Lunch - soup and sandwiches
1:30	An overview of DMR's communication study by Blaine Atkinson
2:30	Demos such as micro to mainframe link products etc., will be run during break times and on Day One from 2:00 to 7:00 pm.
5:00	Social Hour/Informal Discussions

Conférence sur les systèmes informatiques
du gouvernement du N.-B.

Fredericton Motor Inn,

Les 22 et 23 avril 1987

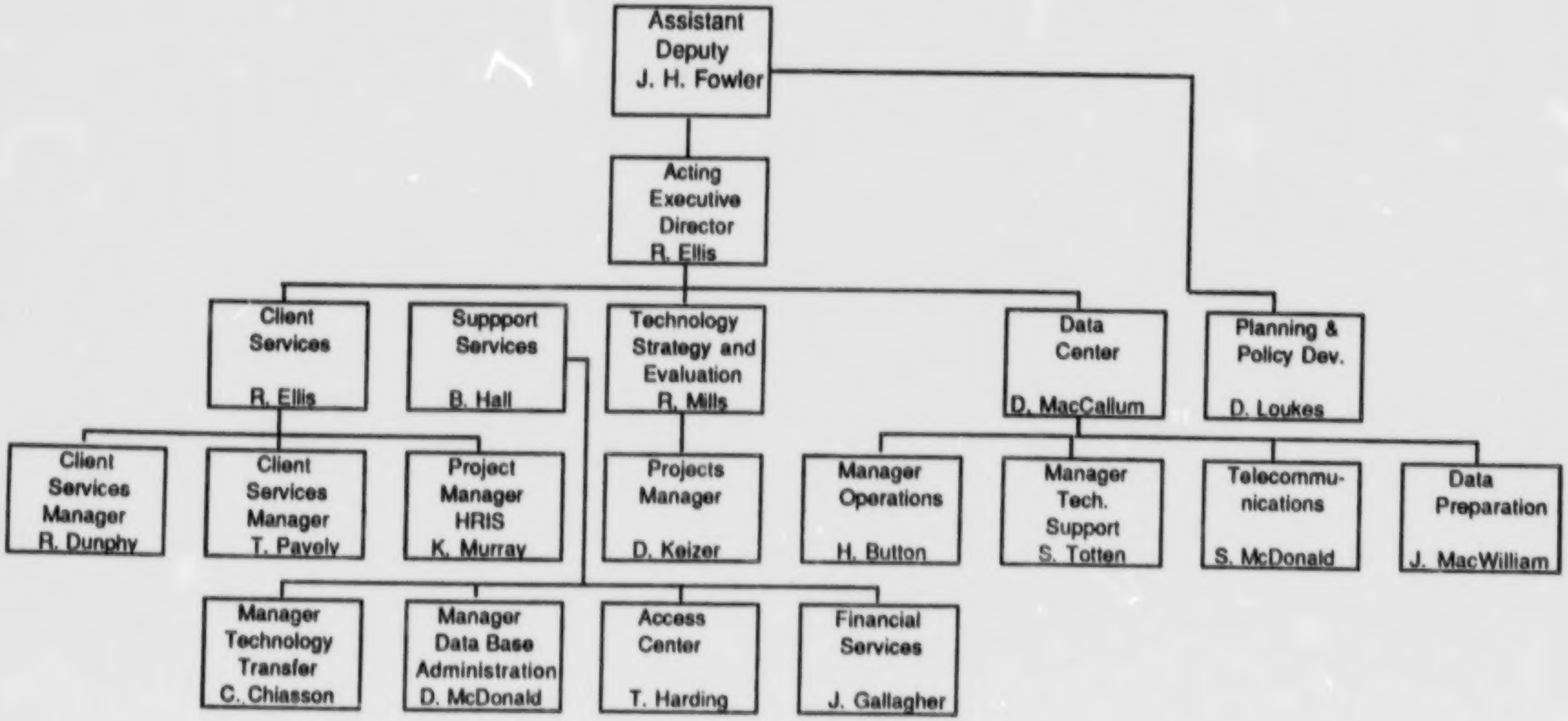
Ordre du jour

Le mercredi 22 avril 1987

Heure	Sujets généraux
8 h	Inscription
8 h 30	Mot d'introduction à la conférence par Jerrie Fowler
8 h 35	Récapitulation de la dernière conférence par David Loukes
8 h 45	Introduction aux communications par Emilia Sousa, Gordon Boone, Glen Boyd et Drew Ingraham
10 h	Pause
10 h 30	Exposé sur l'architecture des communications, présenté par Art Caston de DMR
11 h 30	Danny Kelzer fait le point sur l'étude réalisée par la DSI relativement aux communications
12 h 30	Déjeuner - soupe et sandwiches
13 h 30	Blaine Arkinson donne un aperçu de l'étude sur les communications réalisée par DMR
14 h 30	Des démonstrateurs, par exemple des produits de liaison entre des micro-ordinateurs et le gros ordinateur, etc., seront présentés pendant les pauses ainsi que de 14 h à 19 h la première journée
17 h	Période de rencontre sociale et de discussions

ISD Organization Chart

INFORMATION SYSTEMS DIVISION



Assistant Deputy J. H. Fowler
Acting Executive Director R. Ellis
Client Services R. Ellis
Suppport Services B. Hall
Technology Strategy and Evaluation R. Mills
Data Center D. MacCallum
Planning & Policy Dev. D. Loukes
Client Services Manager R. Dunphy
Client Services Manager T. Pavely
Project Manager HRIS K. Murray
Projects Manager D. Keizer
Manager Operations H. Button
Manager Tech. Support S. Totten
Telecommunications S. McDonald
Data Preparation J. MacWilliam
Manager Technology Transfer C. Chiasson
Manager Data Base Administration D. McDonald
Access Center T. Harding
Financial Services J. Gallagher

Department Of Supply & Services
Information Systems Division
Organization (as of Oct. 31/86)

ASSISTANT DEPUTY MINISTER: **Jerrie Fowler**

DIRECTORS:

Planning & Policy Development	David Loukes
Client Services	Robert Ellis
Technology Strategy & Evaluation	Rod Mills
Support Services	William Hall
Data Centre Services	Danny MacCallum

Planning and Policy Development

DIRECTOR: **David Loukes**

Senior Planner: Gary Andrews
Senior Planner: Doug Harris

Department Of Supply & Services

Information Systems Division

Client Services

DIRECTOR: Robert Ellis

Manager: Richard Dunphy

Project Leaders

Agriculture	David Cowperthwaite
Alcohol & Drug Dependency Commission	Matt Rickard
Community Improvement Corporation	David Cowperthwaite
Finance (Tax Administration)	Richard Thomas
Fisheries	David Cowperthwaite
Natural Resources & Energy	David Cowperthwaite
Health & Community Services	Matthew Rickard
Labour	David Cowperthwaite
Municipal Affairs & Environment	Richard Thomas
Occupational Health & Safety Comm.	Matthew Rickard
Personal Social Services (RPSS)	Matthew Rickard
Supply & Services	David Cowperthwaite
Transportation	Mike Hennessey

Project Manager: Keith Murray

Team Leader

Human Resources Infor. Systems (HRIS)	Diane Nadeau (Technical)

Manager: Tony Pavely

Project Leaders

Advanced Education & Training	Jean Lee
Board of Management	Dick Slipp
Education	Muhammad Hanif
General Government	Muhammad Hanif
Income Assistance	Donna Clark
Information Systems Branch-Client Services	George Phillips
Justice	Muhammad Hanif
Office Of The Comptroller (Financial)	Dick Slipp
Office Of The Comptroller (Payrolls)	Muhammad Hanif
Student Information System (WSIS)	Jean Lee

Department Of Supply & Services

Information Systems Division

Support Services

DIRECTOR: Bill Hall

Manager, Technology Transfer:	Charlie Chiasson
Development Support:	Bill Holt
Applications Consultant Office Technology:	Bob Sweet
Applications Consultant Micro Service Delivery:	Keith Calder
Library Services	David Campbell
Manager, Data Base Administration:	Don McDonald
Data Base Consultant:	Hane El-Hawary
Data Base Consultant (DMS):	Cheng Wu
Mapper & Sperrylink Co-Ordinator:	Art Cloyg
Data Base Consultant (IBM Services)	Janet Michaud
Manager, Access Center	Tom Harding
Finance and Office Administration Support:	Janice Gallagher
ISD Librarian	David Campbell

Department of Supply & Services

Information Systems Division

Data Center Services

DIRECTOR: Danny MacCallum

Manager, Operations	Harvey Button
Communications Analyst	Drew Ingraham
Supervisor of Computer Operations	David Smith
Supervisor of Terminal Control	Hilly Booker
Supervisor of Production Control	Ernie Ackerson
Client Services Representative	Myrna Tweedie
Tape Librarian	Doris Demers
Manager, Technical Support	Shirley Totten
Lead Systems Programmer - Sperry	Debbie Allison
Lead Systems Programmer - Sperry Communications	Jeff Bourque
Lead Systems Programmer - IBM	Doris Wu
Lead Systems Programmer - IBM Communications	Gordon Boone
Manager, Voice Communications	Steve McDonald
Manager, Data Preparation and Wang OIS/Alliance Support	Judy MacWilliam

Department Of Supply & Services

Information Systems Division

Technology Strategy and Evaluation

DIRECTOR: **Rod Mills**

Special Consultant (Communications)	Danny Keizer
Special Consultant (Wang, VS)	Susan Paul

List of Attendees

NB Government Information Systems Client Conference
April 22 & 23, 1987

List of Client Attendees

	Telephone Number
Advanced Education & Training	
Christopher Barr	453-8207
Laura Miller	453-8257 OR 453-2641
Bill Waugh	453-2588
Agriculture	
Richard Ward	453-3266 OR 453-2521
Alcohol & Drug Dependency Commission	
Ted Hudson	453-2136
Arthur Naish	658-2755
Board of Management	
Dave Strang	453-2115
Arnie Wilkins	453-3835
Commerce & Technology	
Gary Fraser	453-2474
Community College	
Normend Brunelle (Bathurst)	548-4591
Community Improvement Corporation	
Charles Landry	453-9981
Education	
William Brydges	453-2785
Roger Ignatius	453-2785
Gordon Scott	453-2785
Diane Weston	453-2785
Finance	
Jacques Fournier	453-2404
Vernon Kitchen	453-2404
Fisheries	
Diane Nadeau-Harmon	453-2251
Health & Community Services	
John Cuthbert	453-2279
Lynn Levesque	453-2279
Charles McKendy	453-3807
Ray McNeil	453-2279
Terry Sabourin	453-2279
Reid Saunders	453-2279
Denise Seleese-Guitard	453-3830
Claudette Savoie	453-3830

NB Government Information Systems Client Conference
April 22 & 23, 1987

List of Client Attendees

	Telephone Number
Income Assistance	
Gary Baird	453-2866
Denise Chase	453-2033
Tony Easterbrook	453-2910
Justice	
Dianne Yates	453-3693
Labour	
Stuart Oulton	453-3976
Jim Stoddard	453-3976
Legislative Assembly	
Yves Godbout	453-6764
Land Registration Information System	
Ronald Richard	453-3917
Municipal Affairs & Environment	
William Ayer	453-2669
Plen Dickson	453-2075
Brian Mills	453-3611
Bill Morrison	453-2075
Mary Ellen Owens	453-3611
Pat Tang	453-2626
Natural Resources & Energy	
Faye Cowie	453-5598
Lyn Fairweather	453-5598
NB Housing Corporation	
Grant McLeod	453-7755
Office Of The Comptroller	
Vishnu Chotai	453-2565 OR 453-2641
Pat Doherty	453-2250
Ken Fitzpatrick	453-2250
Paul Munn	453-2250
Supply & Services	
Jean-Serge Maillet	453-5389
Tourism, Recreation & Heritage	
Dean Mundee	453-2070
Tom Parker	453-2897
Joyce Waterhouse	453-2354

NB Government Information Systems Client Conference
April 22 & 23, 1987

List of Client Attendees

	Telephone Number
Transportation	
Glenn Boyd	453-2990
Janet Digdon	453-2990
Rick Kirkbride	453-2990
Norma Losier	453-2990
Dave MacFarlane	453-3393
Lori MacMullen	453-2990
Pam McNeil	453-2990
Emilia Sousa	453-2990
Carol Young	453-2990
Presentors	
Blaine Atkinson, DMR & Associates	458-8066
Art Caston, DMR & Associates	458-8066
Colin Payne, HRIS Project	453-2093

NB Government Information Systems Client Conference
April 22 & 23, 1987

List of ISD Attendees

Information Systems Division	Telephone Number
Gary Andrews	453-5899
Hilly Booker	453-5323
Gordon Boone	453-5305
Harvey Button	453-5312
Dave Campbell	453-8877
Arnum Canning	453-8884
Charles Chiasson	453-6259
Donna Clark	453-3276
David Cowperthwaite	453-6281
Sue Crandlemire	453-6217
Richard Dunphy	453-6279
Bob Ellis	453-8861
Jerrie Fowler	453-3707
Bill Hall	453-8863
Muhammad Hanif	453-8889
Tom Harding	453-6253
Michael Hennessey	453-6240
William Holt	453-6180
Drew Ingraham	453-5322
Danny Keizer	453-4487
Jean Lee	453-6236
Robert Loughlin	453-4475
David Loukes	453-6205
Don McDonald	453-8869
Rod Mills	453-8862
Dennis Muehlhauser	453-6175
Keith Murray	453-2304
Susan Paul	453-4488
Tony Pavely	453-8881
George Phillips	453-8882
Matthew Rickard	453-6284
Dick Slipp	453-8890
Geoff Staples	453-6232
Bob Sweet	453-6163
Richard Thomas	453-6283
Jane Trites	453-6225
Myrna Tweedie	453-5302
Cheng Wu	453-8876

List of Departmental Information Systems Coordinators

Information Systems Co-ordinators
Internal
April/87

Department Name	I.S. Co-ordinator	Phone
Advanced Education & Training	Bill Waugh	-2479
Agriculture	Bob Goggin	-2521
Alcohol & Drug Dependency Comm.	Ted Hudson	-2136
Board of Management	Arnie Wilkins	-8958
Commerce & Technology	Gary Fraser	-2474
Community Improvement Corp.	Gordon Gilman	-2277
Education	Gordon Scott	-2369
Executive Council	Mike Wood	-2314
Finance	Barry O'Donnell*	-2708
Fisheries	Diane Nadeau-Harmon	-2251
General Government	Barry O'Donnell*	-2708
Health & Community Services	Ray McNeil	-6396
Income Assistance	Tony Ratliffe	-2882
Justice	Dianne Yates	-3693
Labour	Stuart Oulton	-3976
Legislative Assembly & Audit. Gen.	Yves Godbout	-2243
Municipal Affairs & Environment	Bill Morrison William Ayer	-2075 -2669
Natural Resources & Energy	Lyn Fairweather	-5598
Office of Comptroller	Pat Doherty	-2250
Occupational Health & Safety Comm.	Edward Lenarczyk	-2467
Supply & Services	Jerry Fowler	-3707
Tourism, Recreation & Heritage	Dean Mundee	-2070
Transportation	Emilia Sousa	-2990

Status Reports

STATUS REPORTS

		Page
1.	Agriculture	246
2.	Alcoholism and Drug Dependency Commission	249
3.	Auditor General	252
4.	Board of Management	255
5.	Cabinet Secretariat	256
6.	Commerce and Technology	258
7.	Education	262
8.	Income Assistance	264
9.	Health and Community Services	265
10.	Justice	269
11.	Labour	274
12.	Municipal Affairs and Environment	277
13.	Natural Resources and Energy	284
14.	Supply and Services	290
15.	Tourism, Recreation and Heritage	292
16.	Transportation	295

STATUS REPORT
NB GOVERNMENT INFORMATION SYSTEMS CONFERENCE
INFORMATION SYSTEMS AND OFFICE AUTOMATION
DEPARTMENT OF AGRICULTURE
BY RICHARD WARD

One of the mandates of this Department is to provide up-to-date information and access to new developments in technology and technical knowledge and necessary services through a network of District centres, regional offices and technical staff.

In order to meet this requirement, automated systems are in place in each of the seven regions and in head office. These systems are applications run on micros and three systems run on minicomputers. In 1986 the department purchased a 1/3 interest in a Wang VS 65. It is being used by the Agricultural Development Board and the Crop Insurance Commission.

Regions

The systems used in the regions are mainly to assist in farm management advisory services, ie. cash flow analysis, determination of most economical crop rotation and financial analysis for loan applications. These systems utilize spread sheets along with Homestead and Farmfax agricultural accounting packages.

Animal Industry

The systems related to the regions but operated out of head office are packages acquired for poultry, livestock feed and animal nutrition. These systems are running on an IBM PC/AT and a Sperry PC/IT. The Provincial Specialist will take his software and load it on the micro in the region to generate his reports in the field.

Farm Management

Cost of production formulas are established on various commodities utilizing Homestead software, on a Vector Graphics 5032 micro. This section is responsible for the overall Farm Management in the Province.

Market Development

This branch does statistical analysis utilizing SPSS, Lotus 123 and Chartmaster.

Land Resources Section

In April Plant Industry will be getting a DEC MicroVAX II which will be used to run the CARIS system (mapping package) and a INGRIS data-base management system. These two packages will be used to tie in farm property mapping, a soil-PH program and also used to monitor the Federal-Provincial agreement (ASA). A modified IBM PC/AT is to tie into the DEC and control a digital tablet on which properties will be digitized and the data stored in the data-base on the DEC. The Farm Land Identification Program (FLIP) programmed in Cobol on a Vector 5032 will eventually be transferred to the DEC.

Agricultural Development Board

The Board is running their systems on the Wang VS 65 located in the Centennial Building. The applications are using VS Cobol and the DataEntry software packages. Three of our Wang workstations connected to our Wang OIS 140 can access the VS 65 via a multi-drop line.

Uses of the System

Presently running on the system is the Loans Receivable System of the Department . This system monitors 1709 accounts with a total receivable of around 72 million dollars. The monitoring consists of posting payments, disbursements, calculating interest/subsidy, insurance premiums and providing payment notices, receipts, client statements, and end of month balancing reports. This system processes approximately 2200 transactions per month.

Also a Lime Subsidy System and a Gypsum Subsidy System is running on the VS. This system consists of approximately 15 Cobol programs which record lime/gypsum approvals for farmers, the amount of lime or gypsum delivered and calculates a subsidy figure (based on the amount of lime delivered and the transportation subsidy rate per mile).

Future of the System

The VS allows plenty of room for expansion and there are several areas under direct supervision of the board that can be computerized to utilize information already contained in the Loan Receivable data files. This will reduce manual processing time considerably and provide up-to-date reports. There are also systems running in other Branches (programmed in Cobol) which could be effectively transferred to the VS, such as the departments mailing list system which could be done much more efficiently and for a reduced expense for the department..

Crop Insurance Commission

The Crop Insurance Commission system (CICS) presently running on the Wang VS 65 via a multi-drop line from a Wang PC. The Cobol system keeps records on just over five hundred clients who can insure their crops from loss by disease, crop failure, drought, etc. Historical records dating back to 1975 in some cases are kept and are used to determine average yields, surcharges/discounts, etc. for premium bills, case history of the crop, etc. The system is used to input data from the application, acreage and production reports, produce premiums bills, record payments, print proof of loss forms and do indemnity calculations and various summary reports. Another important function is to provide statistics for use by the Provincial and Federal Crop Insurance Commissions.

Market Organizations

Statistical analysis of commodity pricing using various status packages and Lotus 1-2-3 used in conjunction with systems operated by various commodity marketing boards and agencies. They are using an IBM PC/AT with a Roland plotter.

Dairy Products Commission

The Dairy Laboratory operates a Texas Instruments DS990/10 minicomputer running version 3.6 of the DS operating system. The system has 5 terminals and 1 printer in the lab itself and runs a remote terminal with an attached printer at Barry House where the Farm Products Marketing staff work. The TI is interfaced to two Milko-Scans and one Fossomatic milk analyzers to record milk test data on-line. This data is transmitted to MacDonald College just outside of Montreal almost every day, while other data is sent to the computer at the Milk Marketing Board in Sussex twice a month. The TI also is used to look after the Quality Control program, Receipts and Utilizations by the dairies in the province, Farm Inspections, etc.

Future

The Client Services Branch of ISD has just done a Needs Accessment study of the department. We anticipate a rapid growth in the acquistion and use of micro computers over the next year or so

Staff 1 CPA III (R.Ward)

Alcoholism and Drug

Dependency Commission

To: Gary Andrews

From: Ted Hudson

Date: March 11, 1987

Subject: Status Report - ISD Meeting - Hardware and Software Presentation

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The database of clientele utilizing the Treatment, Rehabilitation and Outpatient services of the Alcoholism and Drug Dependency Commission is continually expanding, and through programming arrangements with the University of New Brunswick is becoming more accessible to the end user. This program contains over 21,000 lines of code and to our knowledge is the most advanced **Client information retrieval system** in North America at the present time.

Presently being implemented at the University, utilizing the **optical mark reader**, are programs to accommodate the Community Services offered by the Commission, to other Government Departments, Communities, agencies, groups and individuals within the Province. This will expand over time to provide in-depth data on these services.

Automating the office to computers is an ongoing process with the gradual installation of PCs taking place. Staff instruction is offered weekly (1 hr plus) and on an individual basis as required. The staff are very helpful when other staff members request help they pass on new features of the various programs as they learn them. Computers will be implemented at some Regional Centers during the next physical year.

Dbase programs are in the process of revision to meet the requirements of compiling and will be utilized by each Regional Center as they receive computers.

Future plans include Regional Centers being able to access the database of clients utilizing their particular Center. The programming is currently being done by a Computer Science student as a Masters thesis.

Analysis of the requirements to establish automation between the Regional Centers and Head office is still ongoing.

With the implementation of HRIS the 2 PC/ATs in personnel will be connected to Marysville and will also be utilized as stand alone workstations for the present. This will eliminate the PEP and Labour dept. connections.

Preliminary work is being carried out to establish FIS on line. Hardware and software will be required as well as training for certain staff.

Communication includes:

a. Modem connection to the University of New Brunswick (TSO, VSPC, VTAM, etc.). Software used include FTP, Filelynx, PC-Talk, SCom, Isoft, Procom, and IBM MCI. Currently being developed is a CA Executive (PC version of CA Universe) program for data transfer.

b. Connection to IBM mainframe at Marysville Place utilizing PEP and a protocol converter. (2 PCs connected).

c. File transfer to and from Ottawa Ont.and St.John N.B. using PC-Talk, Scom, Isoft, Procom (Xmodem and Kermit), IBM MCI. Data transferer include both ASCII and Binary.

d. Limited use of iNET 2000, some ECMail and connection to databanks in USA and one in Europe.

Hardware, software and some programs currently in use.

Hardware:	3	IBM PC/ATs		640k, 20 & 30 megs
	3	IBM PC/XT		640k, 20 megs
	1	IBM PC/XT		512k, 10 meg
	1	IBM PC		640k, 10 meg
	1	IBM PC		512k, 10 meg
	1	IBM PC		640k
	2	IBM PC		512k
	1	Corona PC		640k
	1	Bernoulli Box		
	2	Printers	-	Brother 25
	2		-	Brother Twinwriter
	2		-	IBM Quietwriter
	1		-	IBM Quietwriter II
	1		-	Smith-Corona 300
	1		-	Panosonic
	1		-	IBM Graphics

Software:
Lotus 1-2-3
Symphony
dBASE III

dBASE III Plus
SPSS PC +
Clipper

Programs currently in use are:

Symphony:

Casuals: complete record of days worked, hourly rate, separation etc:

Plan of Establishment: Database of all personnel of the Commission.

Six yr.database of Treatment and Rehabilitation, Outpatient and Community Services.

Inventory, Accounting and Travel Expenses.

Numerous other individual programs (spreadsheet).

dBASE III - dBASE III Plus

A program that records all personnel information such as, all types of time off(vacation,sick,etc) and calculates required up to date information for each individual and or Center, shifts worked, exchanged,etc:
Performance Evaluation on all personnel with search ability.

Addiction Research Library with search ability on required variables. Coding set with national coding.

Programs to catalogue pamphlets and films.

SPSS PC +

D.W.I. information and S.H.I.P.

FEC Hudson
F.E.C. Hudson
ISD Coordinator
Alcoholism and Drug
Dependency Commission

Office of the Auditor General

LIST OF OUR CURRENT MICRO INVENTORY

SOFTWARE:

For general Audit Use:

Lotus 1-2-3	Spreadsheet, Data Base, Graphics
FAST	Leadsheet Package
IDEA	Interactive Data Extraction and Analysis
Multimate	Professional Word Processing
DOS 3.1	Used on all our "Hard Disk Machines"
DOS 2.11	Used on our "Floppy Based Machines"
ORG Plus	Organization Chart Software

Specialized Uses:

dBase III Plus	Data Base Management System
Automenu	Menu Generating Software
Norton Utilities	Data recovery software (unerase files)
Pep	Sperry Emulation Package (Mainframe Comm.)

HARDWARE

Secretarial

2 configurations, each made up of:

- 1 Corona PC, dual floppy, 512K memory
- 1 Brother HR35, Letter Quality printer

These machines are essentially stand alone word processors and are rarely used for anything else.

Administrative:

1 configuration:

1 AES PC (ITT Xtra), single floppy, 10 MEG Fixed Disk, Terminal Emulation Boards (Sperry and IBM), Bernoulli Box Interface.
1 Roland PR1215 Dot Matrix Printer.

This machine is primarily used for access to the Payroll system (HRIS), the Financial Information System (as of next year), and other internal administrative systems.

Field Audit:

2 configurations, each consisting of:

1 Corona Portable PC, single floppy, 10 MEG Fixed Disk, 512K memory

These machines are used at the audit clients' site as required on a priority basis, when not required in the field they are used in the office by audit staff.

They are also made available to all staff to take home for their own use evenings and weekends.

Office Computers:

1 configuration:

1 Corona PC, dual floppies, 10 MEG fixed Disk, Terminal Emulation Board, Bernoulli box interface.

This machine is used for most work done by the Manager EDP Audit, it is used for communication with the Provinces Central Computers (IBM and Sperry), Developing Computer Assisted Audit Techniques (mainframe and pc level).

1 Configuration:

1 Compaq 286 PC, dual floppies, 118 MEG fixed Disk, Bernoulli box interface.

This machine is used for work done by all staff when using IDEA, the Manager EDP Audit sets up the files for use by general staff. The development of Computer Assisted Audit Techniques at the PC level is usually done on this machine, because of its speed.

Sharable Devices:

1 EPSON FX 100, Dot Matrix Printer
1 Citizen MPS 10, Dot Matrix Printer
1 IOMEGA Bernoulli Box, 2 X 20 MEG Removable Floppy Cartridges

The Printers are shared via a switch between the two Office Computers, and either can be used as required for the field audit computers. The Bernoulli Box can be used by both Office Computers by simply moving the unit(40 lbs) from one machine to the other.

The prime function of the Bernoulli Box is to transfer mainframe data to the Compaq 286 for use with IDEA.

Board of Management

The Department of The Board of Management is responsible for the operation and administration of a Wang shared access computer system for five Central Agency Departments and for the Province of New Brunswick's Human Resources Information System running on the IBM Mainframe at Marysville Place..

HUMAN RESOURCES INFORMATION SYSTEM:

The H.R.I. Branch of the Board of Management is responsible for the design and operation of the Provincial Governments H.R.I. System. The System runs on the IBM Mainframe at Marysville Place and uses an extensive IBM communications network to connect with Government Departments. Persons wishing information on the communications aspects of the system are asked to please contact the H.R.I. Branch directly.

WANG SYSTEMS:

HARDWARE OVERVIEW:

The system hardware consists of two Wang Alliance 250 CPU'S, four 275MB Disc Drives, and an interface to allow full logon and file transfer capability between the two CPU'S. In addition, the department has just received a Wang VS65 configured with 4MB of Memory, two 175MB fixed and one 75MB fully removable disk drive.The combined hardware will be electronically connected and will support approximately 110 peripheral devices.

USER COMMUNITY:

Generally referenced as the "Central Agency System", it is shared by the Departments of The Board of Management, Cabinet Secretariat, Premier's Office, Executive Council, and the Administration and Taxation & Fiscal Policy branches of the Department of Finance.

COMMUNICATIONS CAPABILITY:

INTERNAL:

Users of the Central Agency System are able to exchange messages, calendaring information, and electronic mail using Wang "Time Management" and "Office" software.

EXTERNAL:

1. 2780 synchronous communications to most other provincial government Wang sites. (Translation Bureau, Queens' Printer etc.)

2. 3270 BSN emulation for access to the HRI system on the I.B.M. Mainframe.

3. Wang WSN Multipoint Secondary Transport for remote Logon to ISD's VS65.

MICRO SYSTEMS:

In addition to the Wang system, The department currently has approximately seventeen IBM and IBM compatible micros which are used to perform a variety of financial analysis functions, and to communicate to the HRI System on the IBM mainframe.

Inter - Office Memo
Note Interservices

Date:	March 4, 1987			
	Name and Title / Nom et titre	Department and Branch / Ministère et direction	Telephone / Téléphone	Reference / Référence
To: À:	Gary Fraser	Commerce & Technology	DEPT. OF COMMERCE & TECHNOLOGY	
From: De:	Mike Wood	Cabinet Secretariat	MAR 4 1987	
Copies to: Copies à:			FINANCIAL PROGRAMS	
Subject: Objet:	Information Systems Client Conference - Cabinet Secretariat Information System Status			

Our information system is centered around a Wang Alliance Model 250 with a 275MB disk drive which serves five workstations. An interface with a similar system in the Board of Management provides us with links to the Premier's Office, Executive Council and the Department of Finance. It is also possible to forward documents to the Translation Bureau. We also have three Wang PCs (two of which also serve as Alliance workstations) and three Corona PCs, as well as a Texas Instruments OMNI terminal.

__WANG ALLIANCE:__ The usual Alliance (Release 4-R) software prevails. We are mainly a word-processing shop, some basic glossaries have been developed, but no appreciable development is occurring in this area at present. There are two visual memory applications under development to track Cabinet Committee proceedings; as well, a centralized file system is being initiated which will be supported by visual memory. There is some modest interest in messaging and calendaring. We do not use the charter graphics package at present.

The Alliance workstations are served by two printers - one high-quality, high-speed dot-matrix, one bottom of the line 20 cps letter quality, both Wang trademark.

__WANG PCs:__ One dual-floppy, two 10 Meg hard disk. One of the hard-disk machines is equipped for telecommunications (Info Globe subscriber). The same PC has a Wang letter-quality printer, the same printer which serves the dual-floppy PC. All three micros are used extensively for word processing, two for Multiplan and one for asynchronous communication. Multiplan applications tend to be short-run customized jobs, although a few support socioeconomic analysis and forecasting.

/2

CORONA PCs: Two dual-floppy, one hard disk. These are all located in the New Brunswick Statistics Bureau, supporting their ongoing statistical analysis and forecasting programs, as well as special efforts such as aggregation of confidential Census of Manufacturing results to publishable levels. Current software includes Multiplan, Lotus 1-2-3, dBase III+, Chartmaster and the Lionheart statistical package. Being sought is a micro-based librarian package suitable for handling queries regarding the department's extensive publications holdings.

TEXAS INSTRUMENTS OMNI: This non-intelligent terminal is also resident in the Statistics Bureau, and provides access both to Statistics Canada's CANSIM database in Hull, P.Q., and to the Conference Board of Canada.

Mike Wood
J. MICHAEL WOOD

SYSTEM CONFIGURATION

COMMERCE & TECHNOLOGY

IBM S/36

March 18, 1987

SYSTEM DESCRIPTION

As Installed:

- 1 Mb Main Storage
- 200 Mb Disk Storage
- 20 IBM 3180 Terminals
- 1 IBM 5224 Dot Matrix Printer (Graphics Capability)
- Diskette Magazine Drive
- 1 Communication Line
- Software - DW/36, PS/36, Query 36, Various IBM Utilities

Additions:

- 768 Kb to Main Storage for a total 1.792 Mb
- 4 IBM 3180 Terminals
- 2 IBM Displaywriters connected via communications line for letter quality printing.
- Connection of 1 IBM Colour PC with Graphics via 5250 Emulation
- 3 Communications lines
  - 1 5194 Controller with:
    - 3 IBM 3180 Terminals
    - 1 IBM 3179 D Terminal with IBM Quietwriter
    - 1 PC with 5250 Emulation and GDC Intelligent Modem
  - 2 PC's with Remote 5250 Emulation
  - HRIS
- 1 IBM 3279 C Terminal
- 1 IBM 3812 Laser Printer
- Software
  - Business Graphics Utility (BGU/36)
  - PC Support 36

MIS PROJECTS

SIFAP Hist and SIFAP	- -	Implementation Complete In addition to tracking of applications and payments, file is used with shell documents to create acknowledgement, approval and rejection letters.
Loans & Guarantees	- -	Implementation Complete File will be used to prepare Minister's Briefing Manual
Other Grants	- -	Data currently being entered Similar to SIFAP, shell documents will be utilized to create acknowledgement, approval and rejection letters as well as commitment forms.
Sub-Agreement	- -	Implementation Complete Again similar to SIFAP, shell documents will be utilized to create acknowledgement, approval and rejection letters.

On-line Policy & Procedures Manual	-	Continuously up-dated
Monthly Report	-	Increased utilization by all Divisions required to maximize potential of the file.
Mfg Directory	- -	Implementation Complete Outstanding work required to ensure that specifically formatted output for hardcopy can be accomplished.

Communications

Line 1 - IBM Displaywriters
(Letter Quality Printing, Transfer of Documents to WANG)

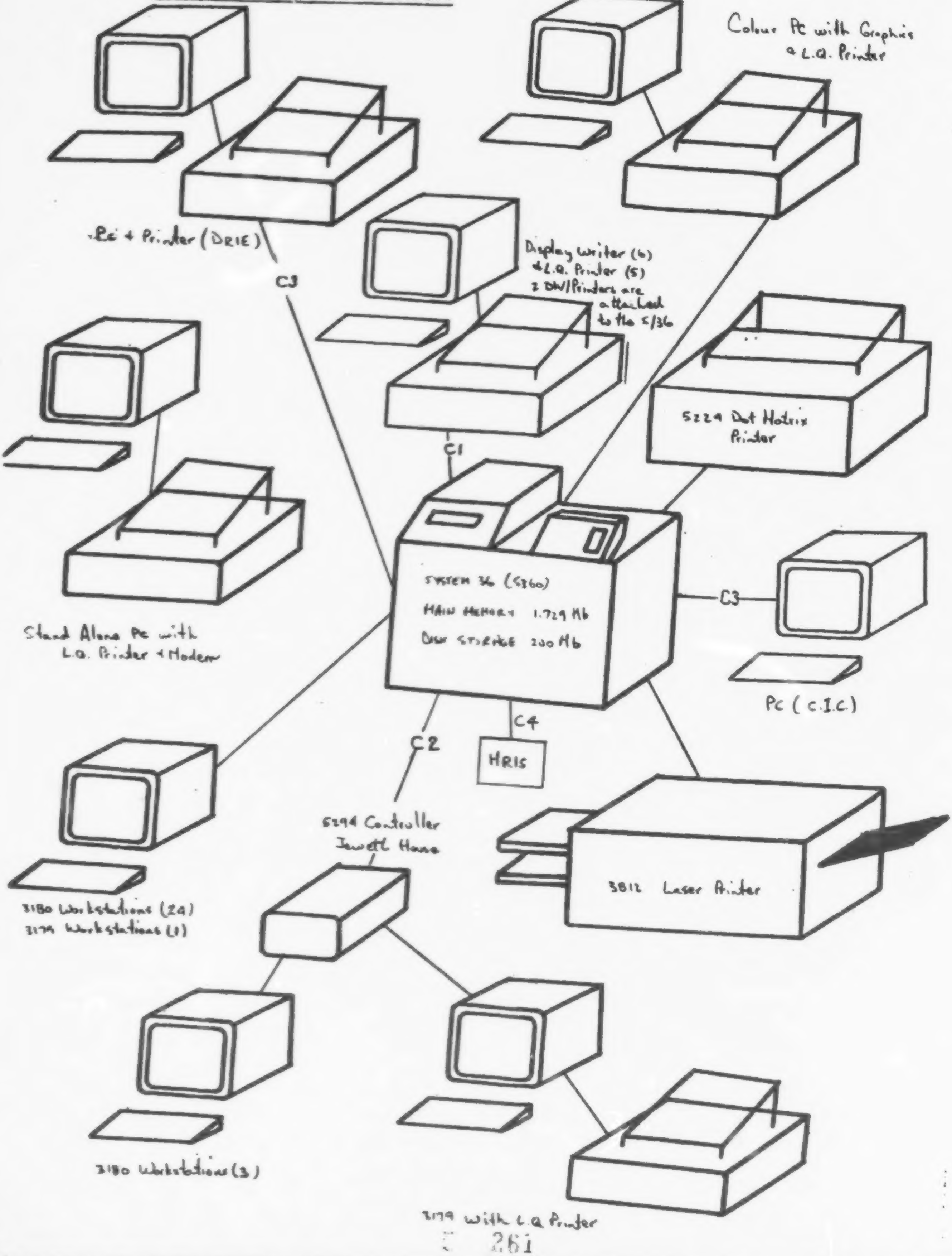
Line 2 - Jewett House (Remote operation of C&T)

Line 3 - DRIE (Brunswick Street)
CIC (York Street
- View Federal/Provincial Sub-Agreement files and Query same.

Line 4 - HRIS (to be installed)

Stand Alone PC with Hayes Internal Smart Modem
(Limited experience)

COMMERCE + TECHNOLOGY MANAGEMENT INFORMATION SYSTEM


Colour PC with Graphics & L.Q. Printer
PC + Printer (DRIE)
C3
Display writer (6) & L.Q. Printer (5) 2 DW/Printers are attached to the S/36
5224 Dot Matrix Printer
C1
SYSTEM 36 (5360)
MAIN MEMORY 1.729 Mb
DISK STORAGE 200 Mb
C3
PC (C.I.C.)
Stand Alone PC with L.Q. Printer + Modem
C2
C4
HRIS
5294 Controller Jewett House
3812 Laser Printer
3180 Workstations (24)
3179 Workstations (1)
3180 Workstations (3)
3179 with L.Q Printer

NB Government Information Systems Conference

Fredericton Motor Inn

April 22-23, 1987

Department of Education Information Sheet

Information Systems and Computer activity within the Department of Education falls into three different activities or areas, This information sheet will identify the three areas and the major items within each.

1. Normal Departmental Information Systems.

There are several systems which run on the Univac Mainframe. These include the Teachers Part II payroll, Student Program Evaluation and one or two Mapper applications.

The Department is currently evaluating its options for the future with regard to the Teachers Part II payroll.

The Department has an NCR Tower XP, this is a UNIX based super micro and is used to support District applications, it is our intent to provide a network to the Districts in conjunction with Brunswick Data, who provide most of our support to the Districts, as well as make use of this system to test out an Office Automation package.

There are many microcomputers within the Department and their uses include word processing, databases, financial spread sheet applications in support of the Districts, statistical applications regarding students and teachers, use by the curriculum consultants to test and evaluate educational software and teacher certification to name a few.

2. District Student and Financial Administrative Applications.

The Department has standardized on both hardware and software for use in the School District Offices and Schools. The hardware being used is NCR Towers. These systems have been installed over the past several years and all earier models which utilized NCR's IMOS system are being phased out.

The Financial Application software is NCR's and has now been converted to run on the NCR UNIX based Towers in both English and French. The major elements are the standards; General Ledger, Accounts Payable, Accounts Receivable and Fixed Assets.

The Student Administration Software, STARS (Student Academic Record System), which is, as the name implies a means of recording pertinent student data, is provided by Brunswick Data Inc., Saint John, N.B. The Province holds a provincial license for its use. Brunswick Data maintains the software for us and all modifications, district training and support is performed by them. This Software consists of several modules namely; Student Scheduling, Attendance, Grade Reporting and Academic History. Because of our licensing arrangement we are able to have it customized to meet our specific needs. Like the Financial Application it too to operates on NCR's UNIX based Tower Systems and is available in both official languages.

We are currently piloting the use of "Optical Mark Readers for Test Scoring and Test Evaluation. A micro based program for Bus Routing is also being piloted.

3. Educational Computing.

The Province has over 3000 microcomputers in the classrooms of the Province. These are located in virtually every school with the majority being in the Senior High Schools. While their use does not fall within the jurisdiction of Information Systems we play a part in establishing standards and in assisting in the Tendering process.

In addition the Departments Microcomputer Resource Centre is a part of Information Systems. Through this center the Department of Education has operated a communications system continuously since 1983, initially providing communications to teachers and school districts for the Educational Micro-computer Resource Center. Using asynchronous communications techniques on DATAPAC, the system has provided three basic services; messaging, information bulletins, and a database of program and text files. Because of the growing demand for communication between districts and the department, the system has been upgraded to provide 24-hour service, a standardized protocol for file transfer, toll-free dialing for registered users in New Brunswick school districts, a more user-friendly, menu-driven format, and an expanded database library of educational computer programs and information files. More information on this service can be obtained by contacting the department.

The use of microcomputers in the classroom in our Province is undergoing change, there is a move from teaching about the computer to teaching with the computer. In this regard several major pilot project are underway which also include the networking of micros. Teacher in-service training remains as an item of major importance.

INFORMATION SYSTEMS DIVISION

DEPARTMENT PROFILE

Department Name: Income Assistance

Information Systems Coordinator: Ratliffe, Tony
Director, Systems Services
Phone: 2882

Mainframe Use: Sperry Mainframe
Mapper
Sperrycalc

Current Development Activities:

RATE - Rental assistance for the elderly (TIP/DMS 1100)
RSTA - Student aid
RMIS - Department's core operational Database - major enhancements.
SPERRYLINK - Maintenance based communicating O.T. facility.

We are heavy users of Sperrycalc and Extracto, SPSS

Micro Computer Use:

XT Hard Disk - 5 Corona's
AT Hard Disk - 10 Sperry II
Printers - 8 Principally NEC 550, 660

(Micro) Software Packages Used:

Database Package - D Base III Plus, considering Oracle

SpreadSheet Package - Supercalc

Word Processing Package - Sperrylink

Communications Package - Sperrylink

Current Development Activities:

Various central office - personnel management, inventory management.

STATUS OF DEPARTMENTAL INFORMATION SYSTEMS
DEPARTMENT OF HEALTH & COMMUNITY SERVICES

BRANCH NAME: INFORMATION SYSTEMS

REPORT TO: ASSISTANT DEPUTY MINISTER - ADMINISTRATION

STAFFING: TOTAL STAFF - 9

Classifications:

- DIRECTOR
- HOSPITAL CONSULTANT
- SYSTEMS PROJECT MANAGER (EDP COORDINATOR)
- ICSIS PROJECT MANAGER (ICSIS)
- RPSS PROJECT MANAGER (RPSS)
- RESEARCH & PLANNING OFFICER II
- ADMIN OFFICER
- UNB CO-OP STUDENT
- CPA I - III (VACANT)

RESPONSIBILITY:

Responsible for the development of the Departmental Strategic plans in the area of Information Systems and the ultimate development and implementation of those plans after departmental endorsement. The Department has a Head Office in Fredericton and field offices throughout the province providing services such as Mental Health, Public Health and Community Social Services. This involves approximately 1500 employees. There are about 35 hospitals with approximately 10,100 employees in Part III Bargaining and 460 Management. Our Branch has the responsibility for the provision of Information Systems in Part I and the responsibility to coordinate the Development of Hospital Information Systems for N.B. Hospitals.

MAJOR SYSTEMS ACTIVITIES:

Development of Systems on Government Mainframes:

The Department currently contracts with the Information Systems Division of the Department of Supply & Services for the development of new systems and the operation and maintenance/enhancement of existing systems.

Some of the major systems currently in production are:

Medicare
Vital Statistics; and
RPSS (Community Social Services Information Systems)

Office Automation:

The Department utilizes IBM & IBM compatible micro computers in head office Carleton Place and field offices throughout the province. Some of the major uses in this area include word processing (WORD PERFECT), spreadsheet applications (SYMPHONY), electronic mail (ENVOY) and presentation graphics (CHARTMASTER, SIGNMASTER, etc.).

Hospitals:

This Branch has responsibility to coordinate the development of Hospital Information Systems for N.B. Hospitals.

MAJOR PROJECTS PLANNED FOR FISCAL 87/88:

* The development of an integrated community services information system (ICSIS). This will be a mainframe system with terminals in field offices throughout the province.

* The use of the central HRIS system planned for the fall of '87.

* The development of a Casual Employment Tracking System and a Recruitment System using the Department of Labour's HP3000.

- Investigation, through pilots and studies, into a province-wide electronic mail system which will allow for the transfer of messages and documents between all Department of Health & Community Services offices. Hospitals may also be included.

- To co-ordinate the implementation of Financial and Patient Care systems in N.B. Hospitals.

DEPARTMENTAL COMMUNICATION EXPERIENCES:

The Department utilizes the province-wide Sperry network for the RPSS system. In general, this network has been satisfactory both in terms of response times and reliability. Some downtime has occurred due to overloading of capacities in certain areas of the province. These problems have been solved through the co-operative efforts of NBTel and ISD.

The Department uses STEP/PEP boards for Sperry terminal emulation in IBM and IBM compatible micros. We were able to install the initial STEP boards with little difficulty and they have performed well. We experienced great difficulty when we upgraded our IBM PC's with the Enhanced Graphics Adapter (EGA) boards.

The Department uses the communications facility within SYMPHONY for use with ENVOY for electronic mail between head office and the field offices. We would not expect that this will be our long-term solution for communication between offices.

The Department will use IBM hardware and software for terminal emulation with HRIS. Although we have the products installed and working, it is too early to tell how well they will perform in an actual production environment.

The Department uses terminal emulation in utilizing the Personnel system at the Department of Labour. The product "PC2622/REFLECTION" works very well. It is easier to install than either the Sperry or IBM products since it is software only and does not require the installation of communication boards.

The Department is slowly getting into accessing Public and Commercial Health Databases using micro computers and communication software. We anticipate that this will become an important endeavor this year.

DEPARTMENT OF JUSTICE

INVENTORY OF SYSTEMS PROJECTS

DEVELOPMENTS UNDERWAY

1. Maintenance & Enforcement (MAES)

Court of Queen's Bench, Family Division; Micro-computer based system - DBase III + and Clipper; 5 single user sites; 3 sites to use Novelle LAN; Prototype nearing completion; Implementation scheduled for July, 1987. The systems provides:

- a database of information on maintenance orders, payors, payees, and the payment status.
- the ability to produce cheques and receipts and reconcile the bank accounts.
- various reports for court purposes.

2. Legal Opinion (LOIS)

Legal Services Branch; Micro-computer based system - D Base III + and Clipper; LAN using Novelle planned; Prototype complete; Expansion to LAN in July, 1987. The system provides:

- the ability to classify opinions.
- the ability to retain and retrieve same.

3. Time Scheduling/Workload Measures

Legal Services and Prosecutions Branches; Micro-computer based system - Feasibility demonstrated; Prototype to be designed in October, 1987.

4. Court Functions

A feasibility study wilkl be conducted on areas for further automation in the courts during 1987/88.

5. Young Offender Act Information System (YOAIS)

A mainframe system is planned for development in 1987/88 to cover all branches of the department dealing with young offenders. The development willl be re-initiated via a prototype in 1987/88 with programming and implementation to extend into 1988/89.

The system will provide:
- a basis for collecting, accessing and tracking young offender information throughout the Justice system.

6. Adult Offender System

A study will be undertaken in 1987/88 to review an earlier feasibility study and document the differences between the YOAIS and an Adult System. This will include a study of how the current provincial court system (JIS) serves our needs.

7. Gun Control

Policing Services Branch; Micro-computer based system; Requirements & Prototype to be completed in 1987/88. The system will provide.

- the ability to maintain information on firearms acquisitions certificates issued;

- the ability to produce financial reports on same for cost receovery purposes.

8. Training Records

Departmental record is required with decentralized data capture at various sites including Policing Services, Corrections and Research and Planning. Micro-computer based; Requirements and prototype to be developed in 1987/88. The system will provide:

- a record of courses taken - by employee
  - by branch/division

9. Municipal Police Assistance Fund

- Policing Services; Micro-computer based system - Requirements and Prototype will be developed in 1987/88.

The system will provide a means of recording commitments and expenditures made from fund.

10. Police Operational Reporting System (PORS)

Participants include: Federal Government (CCJS), NB Police Commission; Justice, Research & Planning; Policing Services; Muncipal Police Forces; Integrated Automated and Manual System proposed; Request for proposals issued; vendors short-listed; Site evaluations complete; decision pending; implentation planned to being September, 1987. The system will provide:

- The ability to retain police records on the system;
- The ability to dispatch cars and retain information on same via system;
- The ability to process all statistical requirements for all levels of users.

11. Computer-Aided Dispatch (CAD)

Policing Services; REquirements currently being reviewed and evalution of potential products; Purchase to be made in 1987/88. The system will provide:

- The ability to retain information on all localities serviced by NBHP;
- The ability to have rosters included on system; system prompts of available cars; retention of hazardous offenders and/or addresses, etc.
- The ability to retain management information on response time, resource use, etc.

12. Corporate Affairs System (JOML)

Corporate Affairs Branch now have a mainframe system which will be enhanced during 1987/88 by downloading information from the JOML system to produce various reports and/or certificates.

13. Consumer Affairs

Consumer Affairs; Micro-computer based with dependent terminals using Classic;
Licensing system developed in DBase III+ and Clipper in a prototyping fashion. Design is complete; Conversion now underway. The system provides:

- The ability to retain information on licenses;
- The ability to produce licenses for various clientele - e.g. real estate agents, direct sellers, etc.

14. Insurance Branch

Insurance use a micro-based system with dependent terminals using Classic also to provide:

- Licensing system developed in DBase III+ and Clipper in a prototyping fashion. Design is complete; Conversion now underway. The system provides:

- The ability to retain information on licenses;

- The ability to produce licenses for various clientele - e.g. real estate agents, direct sellers, etc.

- Accounts Receivable System - To collect information on insurance premiums to be collected.

- Annual Report - A small sub-system used to retain and re-construct information from other systems to produce annual report.

15. Co-ops and Credit Unions

Using a micro-based, dependent terminal via Classis system; Prototype underway of a system to allow financial analysis of the balance sheets and income statements of caisse populaires, co-operatives and credit unions to ensure propr fiscal management.

16. Registry System

Micro-based prototype using DBase III+ at the Sunbury County Office; Prototype complete; Expansion province-wide within 1987/88 to 15 Registry Offices. The system will provide:

- a consolidated, computer-generated index to all land-related documents since mid 1700's;

- The ability to continue to produce indices and eliminate manual systems;

- The ability to integrate microfilm and index.

17. Office Automation:

Using a base of ± 30 micros, primarily in central offices; common applications will be developed in 1987/88 facilitating decentralized data capture and centralized reporting for:

a) inventories
b) human resource information including casual payroll data
c) budget information, etc.

Plans are underway to obtain a WANG mini-computer to serve as an alternative for multi-user applications for small projects, centralized processing of administrative data and a communications medium between users of WANG OIS systems, PC's and the mainframe.

DEPARTMENT OF JUSTICE

INVENTORY OF SYSTEMS IN USE

1. Justice Information System (JIS) - A mainframe based system used by central office and provincial court sites to retain information on adult offenders who have entered the court process.

2. Statistical Systems (SPSS) - Various branches of the department use SPSS as a means to generate statistical reports. Eg. Alert tickets; Corrections information; Human Resources surveys, etc.

3. Rentalsmen - The Central Office and 5 branches of the Rentalsmen use WANG PC's and DBase III to retain and report on information on security deposits, including production of cheques and receipts.

4. NBHP Statistics - Using DBase and a micro the Policing Services Branch processes statistical information on accidents, etc.

5. Corporate Affairs (JOML) - Corporate Affairs use a mainframe application, recently re-designed to provide:
   - data on companies incorporated in province;
   - send annual returns to companies;
   - allow searching by corporate name to

6. Law Reform/QL Systems - Lawe Reform are currently converting from AES C-20 systems to an 8 terminal, WANG 6 mini-computer system. Their system is used to:

   - create text initially;

   - condition text for transmission to Queen's Printer and QL Systems;

   - transmit same;

   - inquire against database to QL;

   - above activities all done in French & English with full range of accented characters.

ACTIVITY SUMMARY

IS COORDINATORS CONFERENCE

MAY - 1987

THE FIRST FIVE YEARS

April 1, 1987 will mark the end of five years of Departmental Computing within the Department of *LABOUR*. Given the remarkable advances in technology over that period, it is hard to believe that the world of computing back then, was a world without the *IBM PC*, and when a megabyte of main memory was reserved for large mainframe computers. By comparison, micro-computers today have *MIP* ratings that exceed many *"not very old"* mainframes, and the memory in office printers often exceeds the mini-computers that drive them.

At the time that the Department acquired its first *HP3000*, several philosphical objectives were established:

1. That individual divisions within the department should have their own development resources to enable them priorize and undertake projects as they saw fit in meeting their program responsibilities, and that these resources were to come from within existing programs and expenditures.
2. That appropriate tools would be either purchased or created, to allow users to undertake the majority of their small system requirements themselves.
3. That system development work should utilize 4th generation tools, almost exclusively, to minimize both development costs and the time required to complete individual projects as well as simplifying maintenance and support tasks.

Perhaps all of the above can be summarized by the objective of maximizing the productivity of users, without unwarranted concern for the *"efficiency"* of the computer i.e. while 4th generation languages consume more computer resources than more traditional 3rd generation compiler languages, it was accepted that the increased demand on the hardware (a declining cost factor) was more than offset by the speed of development and the ease of maintaining the information systems (minimizing the need for human resources, an increasing cost factor).

In 1982, the departmental system consisted of 2 terminals, a single 64 megabyte disc drive and one 180 cps dot matrix printer. Over the next few years, additional terminals and printers were added until the original system had reached its maximum. At that point, a *DEVELCON* dataswitch was purchased, initially to allow additional terminals to access the *CPU* (although only the first 32 could be active at once), and subsequently to allow all terminals to access a second *CPU* which was needed to support the increasing demand for system services. Today, there are over 100 terminals, 35 printers, and over 2500 megabytes of online disk space, supporting a variety of larger information systems and a great many smaller, mostly *"End User Developed"* systems.

COMMUNICATIONS - APRIL 1985

While the initial stages of projects such as the *Apprenticeship Information* System were intended to automate the central office administrative functions, it was clear that full automation would only be possible when the various regional offices were incorporated into the computerized processing.

The process of testing appropriate communication options was faciltiated by a $112,000 contract with *CEIC* for an item banking system, which also had a requirement for both province wide, and inter-provincial communication capabilties (this program responsibility has since been transferred to the Department of Advanced Education and Training). *DATAPAC* (also known as X.25) met all of the defined requirements and hence was selected for a full scale field test from Ottawa in October 1985. When no difficulties were encountered, *DATAPAC* was installed in production mode from Saint John by years end.

In April 1986, testing began on selecting a protocol converter that would enable existing terminals and micro-computers to access the *HRIS* System which was being developed on the government's *IBM* computer. Given that access to the *IBM* proved to be relatively straight forward, and with the transfer of certain programs from the Department of Transportation, which neccessitated similar access to the *SPERRY*, it was decided that a protocol converter for the *SPERRY* system should also be evaluated, and if practical, added to the network.

With the successful introduction of a *SPERRY* protocol converter, the goal of a *UNIVERSAL WORKSTATION* was achieved. Literally, any terminal attached to the dataswitch is now able to access all departmental mini computers, both government mainframes, and any other system that can be accessed via either *DATAPAC* or a 1200 baud dial-up modem. *(SEE ATTACHED DIAGRAM)* In addition to the *HP* devices owned by Labour, the equipment has been proven to work with micro-computers and asynchronous terminals from *DEC, NCR, WANG, SPERRY* AND *IBM*, without additional hardware in each connected work station.

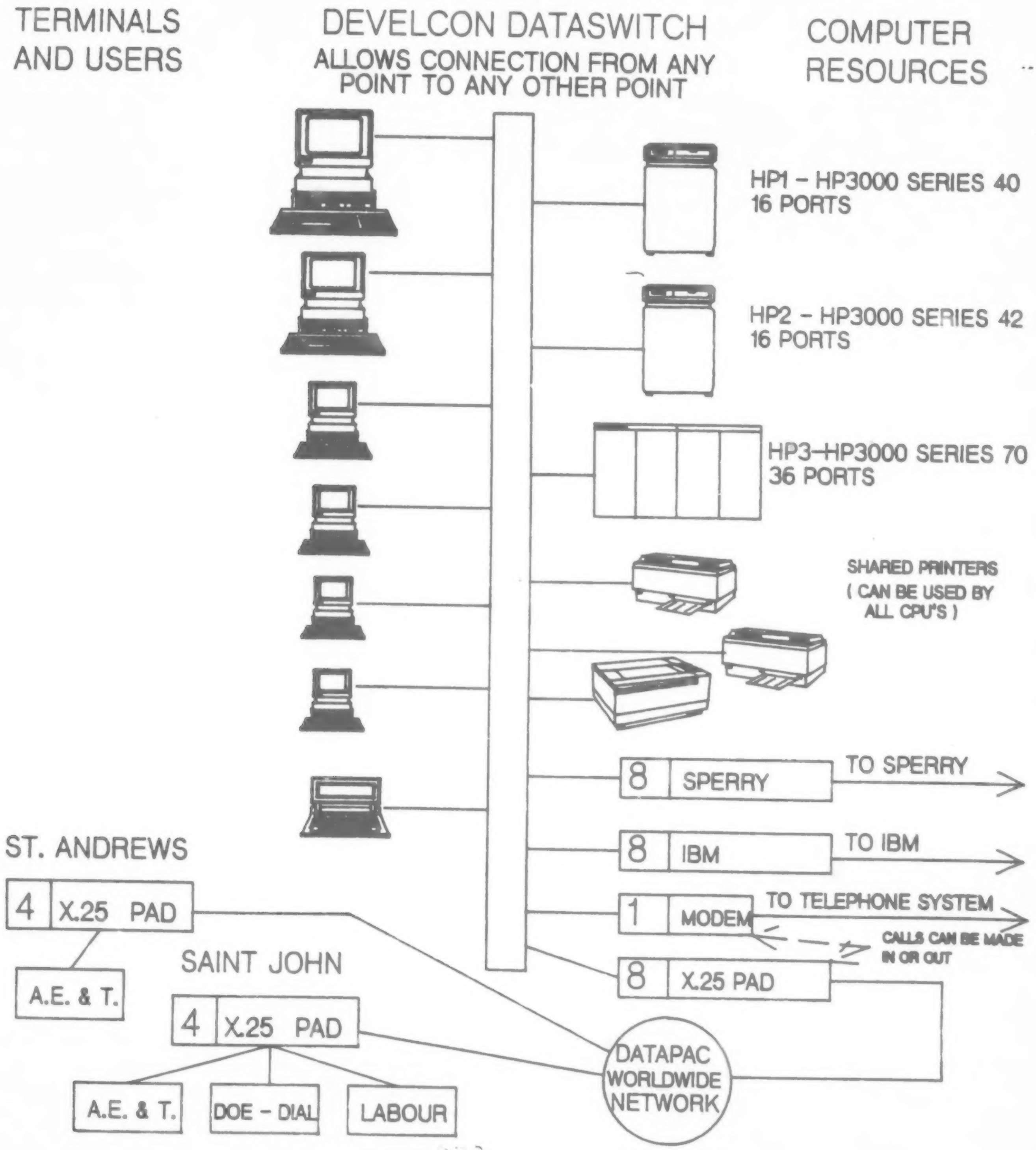
COMPLETING THE ART BENJAMIN CONCEPT

In 1982, Art Benjamin (billed as Canada's James Martin) spoke to the *ISD* co-ordinators and outlined his views regarding the future of personal computing. Amoung the concepts that he introduced were the *"UNIVERSAL WORKSTATION"* and *"THE PERSONAL TOOLBOX"*. The combination of these two concepts suggested that corporate systems such as *HRIS* or *FIS* would reside on the corporate mainframe, department-wide systems would reside on departmental computers, and personal systems would reside on personal computers, complete with what-ever private tools the individual chose to have in their own toolbox. Obviously, in order for an individual to access all of these computers, it would be neccessary for a single workstation to be able to access all of them.

As outlined above, phase one of the *"universal workstation"* has been achieved. Emphasis has now been shifted to advancing the *"toolbox"* philosophy. With the recent introduction of *WINDOWS* by *MICROSOFT*, work is currently underway to determine if it will provide the overall strategic environment neccessary to allow end-users to function at all levels of computer systems, perhaps without even being aware where the data is stored or where the actual computing is being performed.

DEPARTMENT OF LABOUR
SYSTEM NETWORK – JANUARY 1987

(Includes equipment on order)


TERMINALS AND USERS
DEVELCON DATASWITCH
ALLOWS CONNECTION FROM ANY POINT TO ANY OTHER POINT
COMPUTER RESOURCES
HP1 – HP3000 SERIES 40
16 PORTS
HP2 – HP3000 SERIES 42
16 PORTS
HP3–HP3000 SERIES 70
36 PORTS
SHARED PRINTERS
(CAN BE USED BY ALL CPU'S)
8
SPERRY
TO SPERRY
8
IBM
TO IBM
1
MODEM
TO TELEPHONE SYSTEM
CALLS CAN BE MADE IN OR OUT
8
X.25 PAD
ST. ANDREWS
4
X.25 PAD
A.E. & T.
SAINT JOHN
4
X.25 PAD
A.E. & T.
DOE – DIAL
LABOUR
DATAPAC WORLDWIDE NETWORK

STATUS REPORT

N. B. DEPARTMENT OF MUNICIPAL AFFAIRS AND ENVIRONMENT
(ENVIRONMENT DIVISION)

By William Ayer

Environment New Brunswick has a mainframe data handling system in each of its three operational branches. They are:

Environmental Services/Laboratory Management and National Water Quality Data System

Pollution Control/Saint John Air Monitoring System

Water Resources/Flood Forecasting Center
/Water Well Data System

LAB MANAGEMENT/NAQUADAT SYSTEM

Environmental samples are brought to the laboratory which are given field numbers and are entered into the system via a deckwriter which is connected to the UNB/IBM mainframe. Daily work assignments are established by the computer for each section of the laboratory. When the results are completed, they are entered on the system which produces final reports ;which are printed. At the same time, the data in the final reports is fed across to another tape where it is filed on the NAQUADAT system (NAQUADAT is a version of the National Water Quality Data System) at UNB.

This system allows retrievals in various formats for users which are printed at U.N.B.

Proposed Changes

In the next six months to a year, it is hoped changes can be made to the NAQUADAT system which will allow microaccess to the mainframe or to download data from the mainframe to discs. This will allow greater flexibility of user access to the data which is now accessed in limited NAQUADAT format on request for retrievals.

SAINT JOHN AIR MONITORING NETWORK

The Network consists of two permanent primary stations located at the Post Office (uptown) and Forest Hills (east), one permanent secondary station at Champlain Heights and two seasonal secondary stations located at the West Community Hospital in winter and Millidgeville in the summer. A number of pollutants such as sulphur dioxide, nitrogen dioxide, carbon monoxide, ozone and hydrogen sulphide are measured in addition to meteorological parameters such as wind direction and wind speed.

The data at Forest Hills and the Post Office is collected and stored on site by Canadian Applied Technology (CAT) 2200 datalogger (**ENCLOSURE 2**). The cataloggers are connected to the central office in City Hall by Hayes Modems and a dial-up telephone line. The telephone signal passes through the Hayes Modem at the central office and into a black box which splits the signal into two separate routes.

The first route has the IMB XT personal computer automatically polling the dataloggers and is connected to an Epson Printer. A software package called RDAS polls the dataloggers on a present time schedule and stores the data into files. The data is edited and reports etc. are generated.

The second route has the Datacom 400 printer polling the dataloggers manually by the operator on a demand basis. Data coming to the datacom 400 printer is automatically sent down an EIC 90 circuit connected by modem to N. B. Power in Fredericton, Environment New Brunswick in Fredericton, Irving Refining, Irving Pulp and Paper and the Courtenay Bay Thermal Generating Station. The reports are used for the Episode Control Program and to calculate the Air Quality Index released twice daily to the public through the media.

Data collected on the Datacom 400 printer and from strip recorders is copied manually to computer coding sheets. The data is key-taped to a magnetic tape by Data Processing. The magnetic tape is located by a number of ECL batch runs. The data is stored on the Univac system in mass storage where it can be accessed for long term trend analysis, etc.

Refer to their attached diagram for the flow diagram of the entire system.

Proposed Changes

Within the next six months further upgrading of the system should be complete. The anticipated changes are the following:

1. Installation of two CAT 2300 dataloggers at each of the Champlain Heights Station and the West Community Hospital/Millidgeville Stations. The 440 circuits are installed and ENB is awaiting delivery of the CAT 2300's.

2. Upgrade the Forest Hills Station to include a compatible temperature sensor to the CAT 2300 system replacing the thermohydrograph.

3. Items 1 and 2 will eliminate the need for strip recorders in the network. The data will all be processed by the IBM XT and RDAS software to generate monthly and annual reports. The datafile will be reformatted by ASCI II software to upload the Univac system replacing the intermediate steps of coding sheets, keytaping etc.

N.B. FLOOD FORECASTING CENTER

The River forecast Centre uses both the N. B. Government Univac System and the UNB IBM system **(ENCLOSURE 3)**. Two Univac terminals UT520 are connected by telephone lines to the Univac mainframe computer. The output from the Univac is via a high speed printer located in the centre.

In addition, a micro-computer IBM PC/AT is used to communicate with other computer and to perform numerical analysis and model simulations. Currently the PC/AT is used to communicate with the University IBM main-frame. The Maritime Weather Office computer at Bedford, the computer in the World Weather Watch Building at Sutherland, Maryland and the Vax Computer at the N. B. Power Commission.

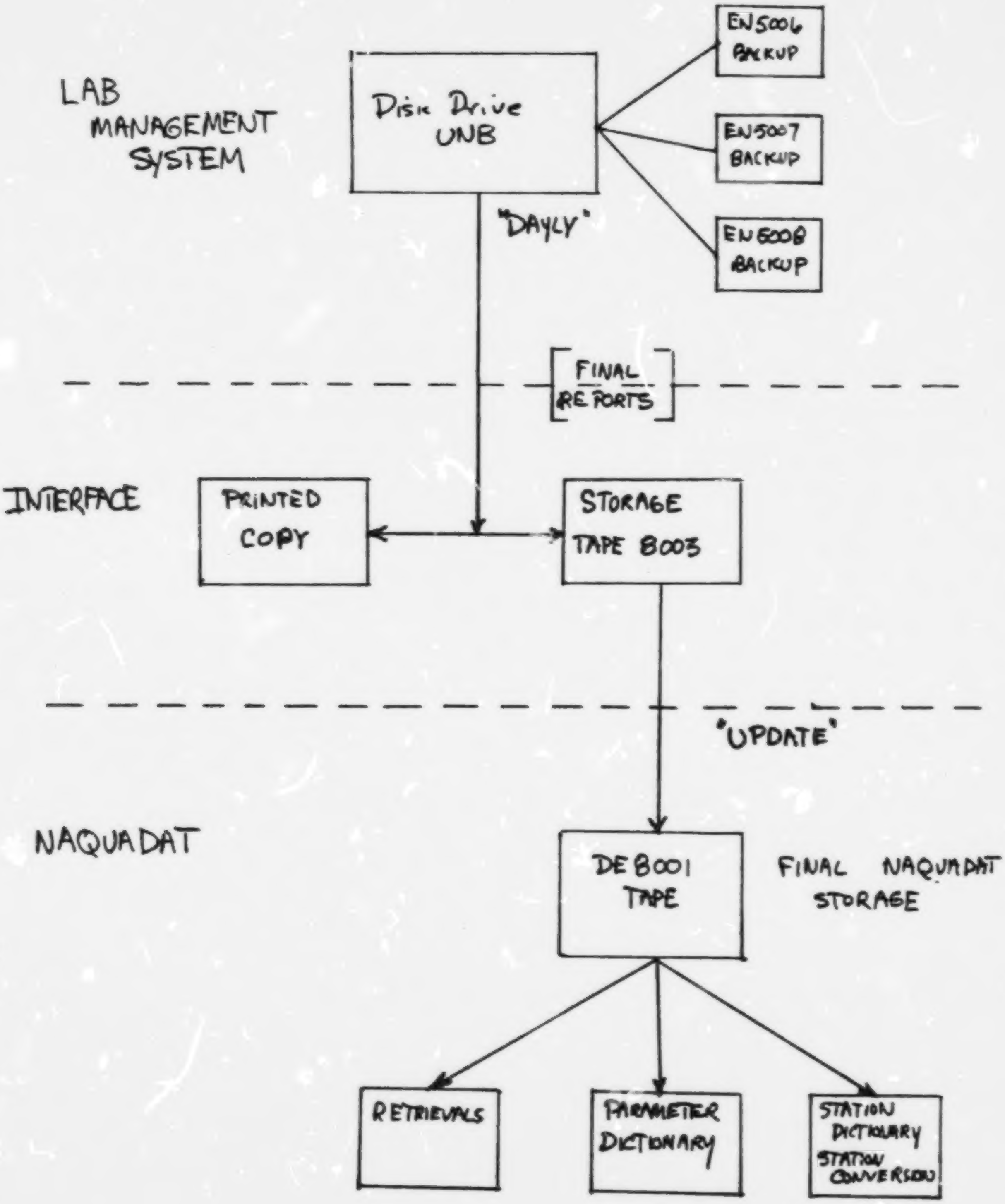
WATER WELL DATA SYSTEM

The water well data system is a file maintenance and report system **(ENCLOSURE 4)**. Approximately 3200 well reports are received annually. Currently, these are transposal to a form which is keyed and processed with a file management package at U.N.B. The system is set up with edit and report features. This system is currently undergoing a rewrite through ISD.

MICRO SYSTEMS

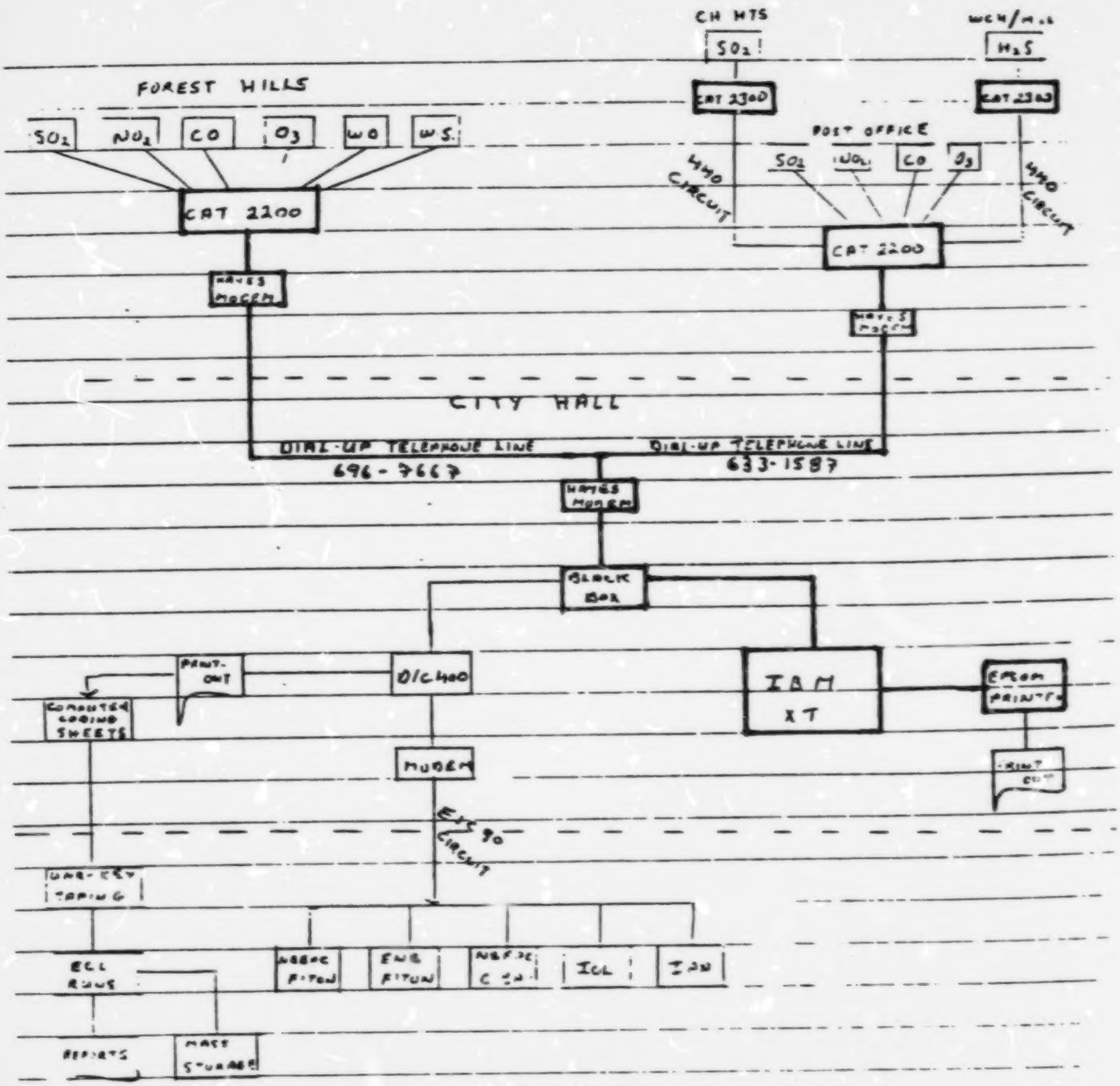
Presently, N. B. environment has thirty-two (32) microcomputers; fifteen (15) Texas Instrument(s), ten (10) Corona(s), (3) Hewlett Packard(s) two (2) Sperry(s) and two (2) IBM(s). Many of these are equipped with hard discs with various types of printers. Compatible software for the machines include D. Base II & III, Word Perfect, Lotus 1,2,3, Basic and Crosstalk.

LAB MANAGEMENT SYSTEM /NAQUADAT


LAB MANAGEMENT SYSTEM
Disk Drive UNB
EN5006 BACKUP
EN5007 BACKUP
EN6008 BACKUP
"DAYLY"
FINAL REPORTS
INTERFACE
PRINTED COPY
STORAGE TAPE 8003
'UPDATE'
NAQUADAT
DE8001 TAPE
FINAL NAQUADAT STORAGE
RETRIEVALS
PARAMETER DICTIONARY
STATION DICTIONARY
STATION CONVERSION

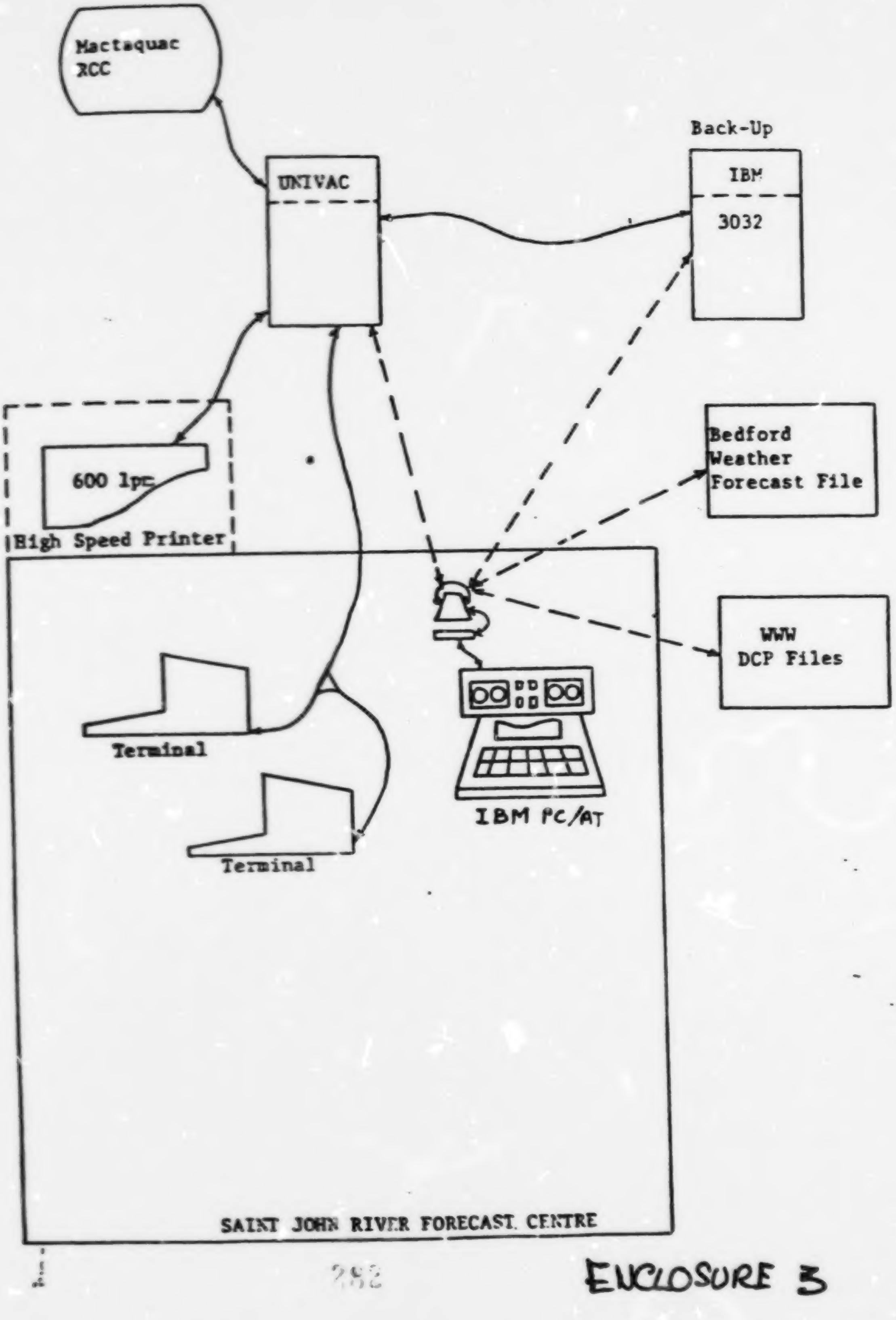
ENCLOSURE 1

JOINT [illegible] AIR MONITORING [illegible]


CH HTS
SO2
CAT 2300
WCH/[illegible]
H2S
CAT 2300
FOREST HILLS
SO2
NO2
CO
O3
WD
W.S.
CAT 2200
POST OFFICE
SO2
NO2
CO
O3
440 CIRCUIT
440 CIRCUIT
CAT 2200
HAYES MODEM
HAYES MODEM
CITY HALL
DIAL-UP TELEPHONE LINE
696-7667
DIAL-UP TELEPHONE LINE
633-1587
HAYES MODEM
BLACK BOX
PRINT-OUT
COMPUTER CODING SHEETS
D/C 400
IBM XT
EPSON PRINTER
PRINT OUT
MODEM
EXT 90 CIRCUIT
UNI-KEY TAPING
ECL RUNS
REPORTS
MASS STORAGE
NBBPC FITON
ENG FITON
NBFDC C [illegible]
ICL
IAN

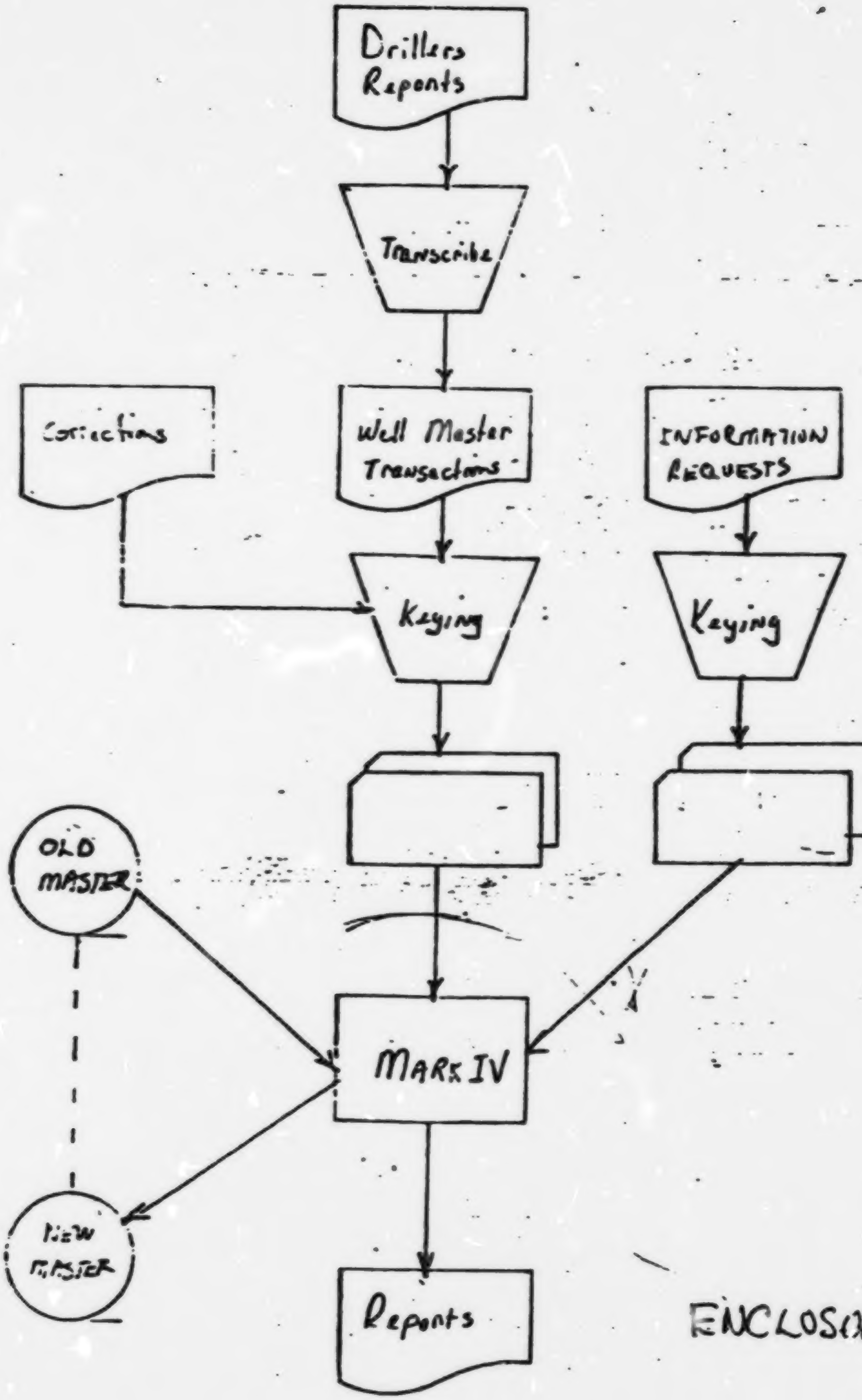
ENCLOSURE 2

FIG. 1 STATUS QUO


Mactaquac
RCC
Back-Up
UNIVAC
IBM
3032
600 lpm
High Speed Printer
Bedford
Weather
Forecast File
WWW
DCP Files
Terminal
Terminal
IBM PC/AT
SAINT JOHN RIVER FORECAST CENTRE

ENCLOSURE 3

1.2 Flowchart.


Drillers Reports
Transcribe
Corrections
Well Master Transactions
INFORMATION REQUESTS
Keying
Keying
OLD MASTER
MARK IV
NEW MASTER
Reports

ENCLOSURE 4

INFORMATION

SYSTEMS

UPDATE

NEW BRUNSWICK

DEPARTMENT OF NATURAL RESOURCES AND ENERGY

INFORMATION SYSTEMS GROUP

Volume 1

March 1987

INTRODUCTION

Since we are in the information business, we decided to issue a newsletter explaining how we got started and what we do. The letter is divided into the several sections beginning with some background information on who we are and what we have to offer. The remaining sections are a progress report of what we have accomplished and our future endeavors. Also note the sections on upgrading software and problems with Bernoulli Units.

BACKGROUND

Information Systems of the Support Services Branch was established in August 1985 to help the department keep abreast of rapidly evolving computer technology and to hopefully prevent the purchase of incompatible or obsolete hardware. At the request of Mr. Ralph Redmond and the Regional Resource Managers, the first order of business was to purchase and install microcomputers in the five regional offices, plus develop seven systems for these micros. The suggested systems were as follows: 1) fish and wildlife violations, 2) financial information, 3) lake information, 4) time reporting, 5) block history, 6) departmental inventory and 7) campsite leases.

We started in August 1985 with a grand total of two employees - one permanent and one contract position; since then our staff has tripled and we have incorporated the responsibility for the Central Records System and a consolidated departmental library. Our staff includes:

Lyndon Fairweather	Manager
Faye Cowie	Programs Analyst
Roxanne Kierstead	Programs Analyst
Paul Myer	Programs Analyst
Tom MacFarlane (Student)	Programs Analyst
Sharon Reynolds	WANG Administrator & Instructor

The objectives of our group are: 1) to ensure the department obtains the best use and advantage from computer and allied technology, 2) to develop departmental information resource policies, and 3) to ensure the department has an effective and efficient records management system.

Please note we are not competing with Supply and Service's Data Processing Group for your data processing dollars; we do not charge for our services - we are here to save the department money, as well as to standardize the department's computer needs.

However, you must realize we CANNOT accept any responsibility for computer systems or programs written by people outside our control. We are, however, prepared to contract programming services on your behalf.

Our services include:

1) Consultative role in the acquisition of microcomputer hardware and software;
2) WANG and microcomputer training;
3) Programming services, depending on available manpower;
4) Evaluate new hardware and software when there is time and a need;
5) Answer questions regarding hardware or software and to troubleshoot microcomputer or WANG problems;
6) Answer questions regarding Mainframe systems.

We support the following microcomputer software: dBASE III and dBASE III PLUS (data managers), SuperCalc3 (spreadsheet) and MultiMate (word processor).

PROGRESS REPORT ON THE REGIONAL SYSTEMS

1. Violation System (Completed)

   - Maintains a current file of all fish and wildlife violations during the past five years.
   - A master file is maintained at the Fish & Wildlife Branch with updated versions of the data sent to the regions every 2 weeks.
   - While the regions only have inquiry capabilities, the Fish & Wildlife Branch can produce monthly and yearly statistical reports of the number and type of apprehensions within each district and region.
   - The regions have immediate access to all previous offenders by simply entering the name of a given individual.

2. Financial System (Completed)

   - Purpose is to bridge the gap between current or actual expenditures and the FIS system.
   - The system was designed for the regions who maintain their budgets at the task level rather than by activity. Although the system was installed in the Department's Accounting Office, the system does not accommodate the accounting procedures within most of the branches.

3. Lake Information (Completed)

   - Information retrieval system on New Brunswick lakes. Data includes the biological, physical, chemical and angling characteristics of approximately 2600 lakes.
   - The system was initiated several years ago at the Fish & Wildlife Branch, so it was upgraded to and installed in the regions.

4. Time Reporting (Completed)

   - The system is a regional management tool for determining the number of hours and man-years spent on each departmental activity.
   - A method of transferring the data to a graphic format has yet to be developed.

5. Block History (In Development)

   - Maintain harvest and silviculture information on New Brunswick forests.
   - The system will record, by block number, the proposed and actual harvest by the various licences, plus any silviculture activities.
   - The user will be able to make ad hoc inquiries from the keyboard, as well as generate standard reports.
   - The system will be installed in the regional offices, with regular transfer of pertinent data to Timber Management's GIS system.

6. Dept. Inventory (In Development)

   - A departmental inventory system is being developed for Technical Services, who will in turn regularly transfer the data files to the regional offices.
   - The regional offices will have inquiry and report capabilities only.

7. Campsite Leases (No Progress)

   - The Lands Branch currently has all lease information on the WANG Alliance System.
   - The best method of providing this information to the regions has yet to be determined.

OTHER COMPLETED SYSTEMS AND PROJECTS

1. Volume Tables (Completed)

   - Produces volume tables from recorded tree diameter measurements of a given sample or plot.
   - The project was initiated during the summer of 1985 by Burt Smith; we completed and installed the system on the regional micros.
   - The volume table system is also available on the Government's mainframe computer, but regional staff did not have access to it; all data had to be sent to Fredericton. Needless to say, the micro system in the regional offices has greatly reduced the "turn around time", which is important as the volumes affects revenue from licencees.

2. Patrol Cards (Completed)

   - Maintains a record of the fish and wildlife patrols, including the number of hours, the zones patrolled, the number of rangers and wardens involved, the number of hours on ATVs, snowmobiles, aircraft; the number of apprehensions, warnings, etc.
   - Generates summary reports for any given time period.
   - This system is special as it not only collects information that was never monitored before, but it also analyses the data to determine more effective methods of enforcement.

3. Hand Held Data Collectors (Completed)

   - Several brands of hand-held data collectors have been tested for use at the Kingsclear Tree Nursery; none have yet been found to be outstanding.

4. Land Grant System (Completed)

   - Lands Branch required assistance merging 25,000 new records into the existing mainframe Land Grant System.

5. Tree Nursery (Five Sections Completed)

   - A tree inventory system was developed for the Kingsclear Tree Nursery to maintain records on each seed stock, the resultant seedlings, their location within the nursery and their eventual destination. In the future, this system will maintain an account of all stocks from the Kingsclear Nursery, including the original seed source of each planting.
   - The system will later be installed at the Madran and Kent Nurseries once the system has been completely tested at Kingsclear.

6. Woodlot Owners (One Section Completed)

   - A mainframe file (land taxation file from Municipal Affairs) containing all private woodlots between 10 Ha and 4000 Ha was downloaded to a microcomputer. The 52,000 record file, which was sorted by region and Forest Marketing Board, is being used for inquiries only at this time.
   - The system is presently installed at Forest Extension and will be given to the regions at a later date.

7. Small Game Survey (Completed)

   - A small system was developed for the Fish and Wildlife Branch to produce simple statistical reports from their annual small game survey.

CURRENT PROJECTS

1. Block History

- As previously described in the regional systems section.

2. Departmental Inventory

- As previously described in the regional systems section.

3. Plantation Development Assessment

- The system was previously developed by the Department of Supply & Services, but revisions are required to accommodate modifications to the data entry form.

4. Mineral Claims

- Records of the mineral claims are presently maintained on the WANG Alliance System.
- The data will be transferred to a microcomputer and programs will be written to maintain the system.

5. Hunter Education

- The system will maintain information on students and instructors involved in hunter education.
- The system will be installed and maintained at the Fish & Wildlife Branch.

6. Woodlot Owners

- Purpose is to track the status of private woodlots, both managed and unmanaged. A history of all known silviculture, infrastructure and harvesting activities will be maintained.

7. Library & Central Records

- All departmental books, journals, magazines, etc. are currently being being entered into UNB's Phoenix library system via a microcomputer.
- Central records is capturing their filing system on the WANG Alliance System, providing inquiry capabilities for all branches residing at the Forestry Complex.

8. Microcomputer Installation

- We have helped acquire and/or installed 41 microcomputers within the various branches and regions of this department.
- Prior to the 1986-87 tender, only Corona PC's (27) were purchased; since then 13 Sperry PC's, which are Corona compatible, have been acquired as Corona's were not on this year's tender. It is hoped Corona will be available in 1987-88 to maintain consistency and compatibility within the department.

9. New Building

- Our group has been involved in the wiring and communications plans for the new Forestry Complex.

10. On-going Help

- We provide assistance, when requested, on mainframe, WANG and micro systems; selection of hardware and software; and general "troubleshooting".

11. Training

- Sharon is providing courses in the following areas:

  1) Introduction to Micros and DOS
  2) Introduction to dBASE III PLUS
  3) Introduction to SuperCalc3
  4) Introduction to MultiMate
  5) WANG Word Processing

- Since October 1986, a total of 100 employees have taken WANG and microcomputer training: 51 in "Introduction To Micros", 40 in "Introduction To dBASE" and 9 in WANG.
- At present, we are booked until April 30, 1987; you may, however, call to be put on a waiting list. We also plan to offer more advanced training later in the year.

FUTURE PROJECTS

1. Campsite Leases

    - As previously described in the regional systems section.

2. Upgrade WANG System

    - Upgrade system to accommodate all users at the Forestry Complex.

3. Telecommunications

    - Investigate hardware and software for networking several micros, communications with the regional offices and communications with UNB and Government mainframes.

UPGRADING SOFTWARE

Software companies are continually upgrading their products to make them more powerful, as well as easier to use. Ashton-Tate, which manufactures dBASE and MultiMate products, will upgrade your existing software for a fee, plus the return of one of the original diskettes. The costs are as follows:

dBASE III	TO	dBASE III PLUS	$235.00 US
MultiMate 3.3	TO	MultiMate 3.6	$110.00 US
SuperCalc3	TO	SuperCalc4	$195.00 CN

We are not suggesting everyone should purchase the upgrades; it depends on how extensively the software is presently being used and whether the upgrade will provide features that will be useful to the users in your area. For instance, non-programmers would not be aware of the new features of dBASE III Plus, but it does have an improved menu system for beginners. MultiMate has also been greatly improved with the addition dual column print, typewriter mode capabilities, and improved merge print data files.

We only have one order form, so please contact our office (453-5598) prior to April 15, 1987 if you wish to upgrade your software.

PROBLEMS WITH BERNOULLI CARTRIDGES

The department now has seventeen 10M Bernoulli Units throughout the various branches and regions. The first units were installed in the regions about a year and a half ago and we are now receiving complaints regarding the performance of the cartridges. Some regions have discovered read/write errors during backup procedures on as many as three or four cartridges.

We met with a representative from Iomega (the manufacturer) who informed us the cartridges have a life expectancy of one year. In some cases, we are able to recover the bad cartridges, but their reliability thereafter is questionable.

It should be noted that the short life expectancy (1 to 2 years) of Bernoulli cartridges was only discovered recently and they still remain the only medium on the market that can safely transport large quantities of data - the prerequisite for regional and branch systems that transfer data back and forth.

Dysan, which manufactures floppy diskettes, have just recently entered the Bernoulli cartridge market and offering a 1 year warranty and a cheaper price; we will keep you posted on their performance.

This newsletter has been long, but we've had a lot of catching up to do. We will attempt to issue a newsletter every couple of months to keep you informed of our current and future endeavors, plus pass along any tips and traps in micro use.

If have any questions, please call at any time (453-5598).

DEPARTMENT OF SUPPLIES AND SERVICES
SYSTEMS ACTIVITIES UPDATE from October 1986

Administration:

- 1 Wang PC dedicated to ATTACHE and MULTIPLAN applications
- 1 On-line terminal to FIS allowing direct access for budget information

Central Purchasing:

- Sperry IT using a Dbase III application for Central Store's inventory, ordering and catalog purposes

Translation Bureau:

- IBM PC using a Dbase III application to control all jobs entering the Bureau and providing production information on translators, revisors and proofreaders.

Construction Division:

- Dbase III+ is being used primarily as a record keeping tool for some 1200 capital projects. Information relating to time and costs are kept on each job.

  Another application is preventive maintenance scheduling for systems in our buildings.

  Other applications range from keeping records of all provincial buildings and account codes to blueprint filing.

- Carrier Engineering software is used as an engineering tool on a daily basis by mechanical engineer and technicians. This is a number crunching package used in facilitating mechanical design such as energy consumption.

- Versa Design: The floor layouts for the Forestry Complex, Marysville Place, Carleton Place and Centennial Building have been entered into the Cadd system. It is a very good use for computer aided drafting where a high number of changes is required.

- National Master Spec of Canada has been used for specialized word processing for assembling specifications using sections from a master database of 1200 sections. The average spec has 30-40 sections, therefore, a great deal of time is saved for the technician and also reduces the risk of interpretation error due to standardization of terminology.

- Harvard Total Project Manager is still under investigation at this time.

77-1185 (8/85)

Inter - Office Memo
Note Interservices

Date:	April 21, 1987			
	Name and Title / Nom et titre	**Department and Branch / Ministère et direction**	**Telephone: / Téléphone**	**Reference / Référence**
To: À:	Gary Andrews			
From: De:	Dean Mundee	Tourism, Recreation & Heritage		
Copies To: Copies à:				
[illegible]	Information Systems Development Activities within Tourism, Recreation & Heritage			

As a result of the merger of the former departments of Tourism; Sport & Recreation; and Historical & Cultural Resources the new Department of Tourism, Recreation and Heritage found itself with a variety of incompatible computer equipment, for everything from Word Processing to the entering of Archaeological field notes and sketches of artifacts. We become the owner of a diverse range of products being used with varying levels of expertise and no overall management plan or strategic development plan.

A significant opportunity presented itself with our planned move to Marysville Place, where for the first time almost all branches of the Department will be under one roof. After considerable study within the Department and with input from the Information Services Division it was decided, from a strategic perspective, to increase the use of automated systems. It was felt that this decision would significantly contribute to maximizing program efficiency and effectiveness in an environment of increasing demands for improved and expanded levels of service with resources which are not increasing proportionately. (This is not a unique situation to this department).

As a first step, a management decision was made to introduce to the fullest extent possible a local area network. In this regard each office at Marysville Place is wired for both voice and data communication. A Wang VS 65 has been purchased with WP Plus, WANG office and PACE applications. Communication devices will tie to the network the two major remote sites of Archaeology (MacKintosh environment) and Archives (IBM environment) as well as the translation bureau. This configuration is expected to be operational by December 1987 at which time requests for new applications will be evaluated and introduced to the network.

As well as the acquisition of new equipment, almost all existing PC's will be wired to the network. The existing two word processing centres (one WANG, the other MICOM) will be replaced with the VS Product to support the entire Department. In order to support Departmental based communications and a decision support network, additional work stations will be installed in areas of the Department which do not presently enjoy DP abilities. These efforts will no doubt require considerable training, support and sensitization to their benefits.

...2

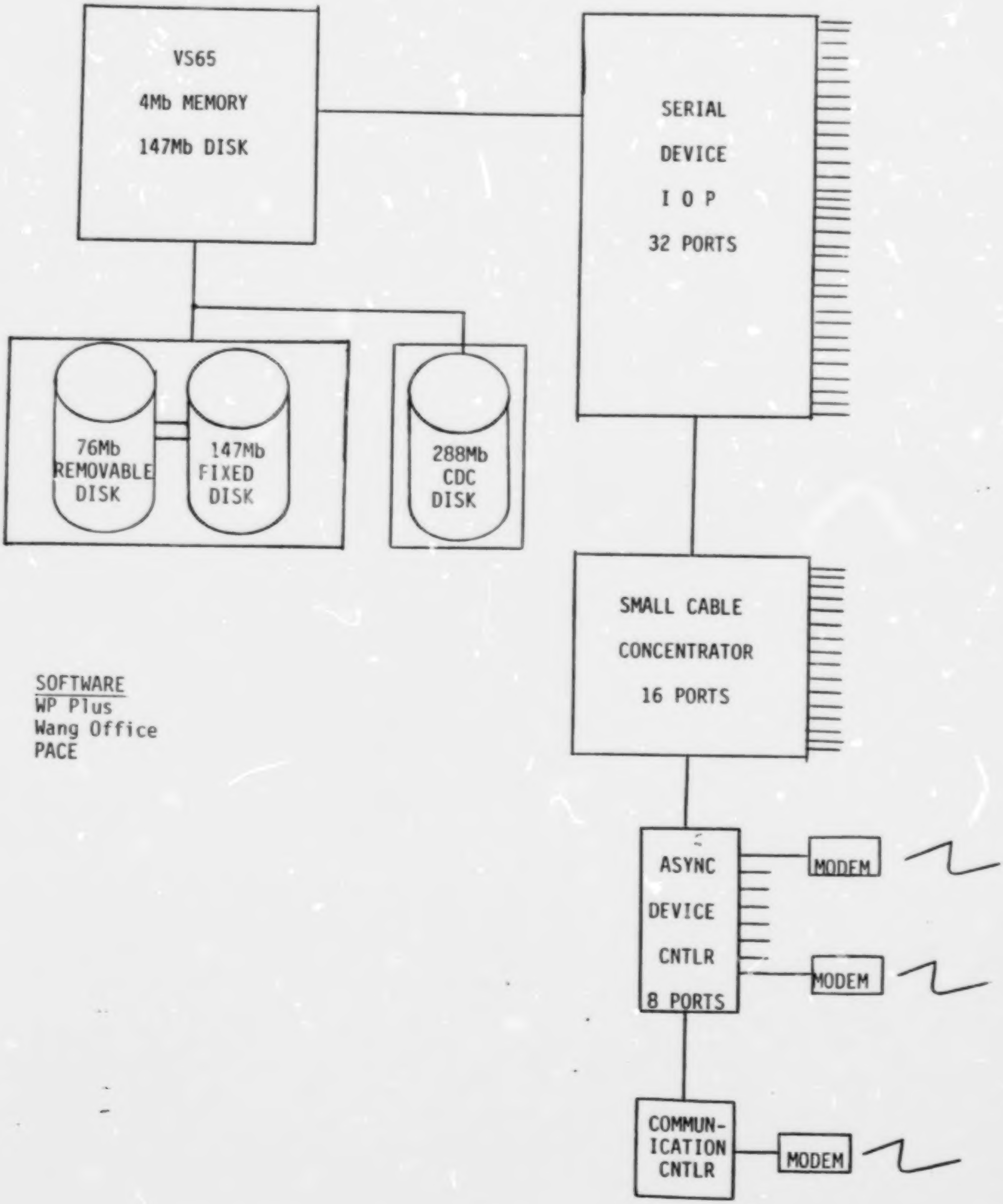
At this point considerable work still remains, working groups must be established within the Department for the introduction and development of the Local Area Network and for the identification of future opportunities. No doubt high on the list will be a regional office communications network and the use of computers in Tourist Information Centres to provide both staff and visitors with up to date tourist information.

Dean Mundee

DM:dl

HOST COMPUTER CONFIGURATION

THIRD FLOOR


VS65
4Mb MEMORY
147Mb DISK
SERIAL
DEVICE
I O P
32 PORTS
76Mb
REMOVABLE
DISK
147Mb
FIXED
DISK
288Mb
CDC
DISK
SMALL CABLE
CONCENTRATOR
16 PORTS
ASYNC
DEVICE
CNTLR
8 PORTS
MODEM
MODEM
COMMUN-
ICATION
CNTLR
MODEM

SOFTWARE
WP Plus
Wang Office
PACE

DEPARTMENT OF TRANSPORTATION

INFORMATION SYSTEMS

STATUS REPORT

Submitted by: Emilia Sousa

1. Hardware Configuration

UNB:	IBM 3083 ; 24M Memory
NB Government:	Sperry 1100/92 (NB Government) 4.0 M Words Memory Sperry 1100/72 (NB Government) 2.0 M Words Memory DCP 40 Communications Subsystem
Local:	Microvax II ; 9 M Memory 456 MB Winchester Disk Drive TSV05 1600 BPI Tape Drive TK50 MG Cartridge Tape Drive DecNet Network IBM Controller 3174 Data General NOVA/2 ; 32K Memory Batch RJE Communications to both IBM 3083 (HASP) and Sperry 1100/92 (DCT 1004) Calcomp 1039 drum plotter
Terminals:	39-Sperry UTS 20/30's 35-Sperry SVT 20's 3-IBM 3191 6-VT220 DEC 2-Decwriter III
Microcomputers:	24-Coronas PC (512K) 49-Coronas PC-HD (512K, 10M disk) 6-IBM XT (512K) 2-IBM AT (640K, 20M disk) 1-Bernoulli Box 2-IBM PC Network 17-DecMate III

2. Software Environment

IBM 3083:	MVS/SE2 3.8 with JES2 SP 1.3.4	
	VTAM	
	TSO	
	VSPC	
	PANVALET	
	ACF2	
	MCAUTO ICES COGO/ROADS	
	SPSS/X	
Sperry 1100/92:	EXEC 8 Level 39R3B	
	DMS 1100	
	TIP 1100	
	HASP 1100	
	MMS 1100	
	SPSS/X	
Sperry 1100/72:	MAPPER 1100	
MicroVax II:	Micro-VMS V-4.4	PL/1 2.3
	All-In-1 2.0	FORTRAN
	DECNET 4.4	DECGRAPH
	2780/3780 Emulator 1.5	DATATRIEVE
	3271 Emulator 2.3	CDD 3.2
	DECCALC 2.2	DECSERVER 100 1.2
NOVA/2:	UTEX/MOS	
	HASP RJE	
	DCT 1004 RJE	
	Remote Job Plotting	
Microcomputers:	dBASE III +	PERFECT WRITER/ SPELLER
	dBASE Lessons	
	GWBASIC	LOTUS 1-2-3
	SUPERCALC 4	PC-DOS 3.0
	MS-DOS VERSION 2.11	PC-DOS 3.1
	MULTIMATE 3.26	BASIC 3.0
	MULTIMATE 3.30	PC Net
	TEACH YOURSELF MULTIMATE	Novel
	MULTIMATE FRENCH PATCH	Clipper
	FANCY FONT	Fastback
	SUPER (EMULATOR PACKAGE)	Clavierf
	CROSSTALK XVI	dBASE III Training
	SUPERSOFT FORTRAN	Norton Utilities
	MICROSOFT FORTRAN	Key Entry III
	PCTUTOR	Overhead Express
	INSTRUCTOR/PROFESSOR DOS	Disk Optimizer
		Smarterm 240

3. Current and Proposed Activities

- Repair Parts Inventory System is being implemented in all Districts (stockrooms and offices) in PC Local Area Networks using Novel.

- Implementation of micro CADD system.

- Second phase of the Fleet Management System is now in development and includes the accounting module with electronic interface with the Financial Information System.

- Expansion of the Automatic Fuel Dispensing System with fifteen more units being installed. A micro to micro communications system using Procom is being implemented to automatically transfer files from the District microcomputers to Head Office.

- All micro Data Management software was converted from dBASE III to dBASE III Plus. As well the systems running on LAN's had their programs adjusted.

- Downloading of the COGO/ROADS system to the MicroVAX II. DEC version will be tested for one year and compared with the IBM version.

- Introduction/training of Micro Computers software and Survey programs to the Districts Construction Engineers. Seventy people have been enrolled in a Computer Literary program provided by the Information Systems Access Center together with the Construction Branch.

- Eliminate all functions still done in the Nova 2 minicomputer and replace with the MicroVAX. Project should be completed during 1987.

- Development of a Prorated Plate Systems.

4. New Systems in 1986

- A new MicroVAX II was installed together with the All-In-1 office automation package. Networking of fifteen of the DecMate III's was done and both beginners and advanced training was given to the Word Processor Operators.

- First phase of the Fleet Management System has been implemented in the District garages.

- Expansion of the Automatic Fuel Dispensing System took place with the installation of ten more CPU's (control pump units) in the Districts.

- A Local Area Network was installed in Head Office using one AT and four PC's to run Roads and Subdivision Inventory Systems.

4. New Systems in 1986 (cont'd)

- A number of small microcomputer systems were developed. A full DOT systems inventory book exists and can be provided upon request.